MONTHLY WEATHER REVIEW.

Acting Editor: ALFRED J. HENRY.

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INTRODUCTION.

The REVIEW for March, 1896, is based on 2,726 reports from stations occupied by regular and voluntary observers, classified as follows: 149 from Weather Bureau stations; 33 from U. S. Army post surgeons; 2,404 from voluntary observers; 32 from Canadian stations; 1 from Hawaii; 96 received through the Southern Pacific Railway Company; 11 from U. S. Life-Saving stations. International simultaneous observations are received from a few stations and used together with trustworthy newspaper extracts and special reports.

The WEATHER REVIEW is prepared under the general editorial supervision of Prof. Cleveland Abbe. Unless otherwise specifically noted, the text is written by the Editor, but the statistical tables are furnished by Mr. A. J. Henry, Chief of the Division of Records and Meteorological Data, who has also acted as Editor during the present month. Special acknowledgment is made of the hearty cooperation of Prof. R. F. Stupart, Director of the Meteorological Service of the Dominion of Canada, Mr. Curtis J. Lyons, Meteorologist to the Government Survey, Honolulu, and of Dr. Mariano Bárcena, Director of the Central Meteorological Observatory of Mexico.

CLIMATOLOGY OF THE MONTH.

GENERAL CHARACTERISTICS.

The month of March was characterized by an excess of pressure and a deficiency of temperature over the interior of the country. The precipitation was above the normal in New England and the southern Pacific Slope, and especially so in North Dakota and the northern Slope. It was below the normal in the South Atlantic States, and especially so in the southern Pacific Slope Region. Severe rainstorms prevailed in New England and central New York in the early part of the month, followed by heavy floods in the rivers.

ATMOSPHERIC PRESSURE.

[In inches and hundredths.]

The distribution of mean atmospheric pressure reduced to sea level, as shown by mercurial barometers, not reduced to standard gravity, and as determined from observations taken daily at 8 a. m. and 8 p. m. (seventy-fifth meridian time), is shown by isobars on Chart IV. That portion of the reduction to standard gravity that depends on latitude is shown by the numbers printed on the right-hand border.

The *mean pressures* during the current month were high over a ridge extending from Athabasca and Manitoba southeastward to Georgia. The highest were: Helena, 30.15; Bismarck, 30.14; North Platte, Mobile, Atlanta, Savannah, and Charleston, 30.13. The mean pressures were low in Arizona, and lowest in the Gulf of St. Lawrence. The lowest were: Charlottetown, 29.81; Chatham, 29.82; Eastport and Yarmouth, 29.83; Sydney, 29.84; Father Point, 29.85; Portland, Me., 29.86.

As compared with the normal for March, the mean pressure was in excess over the lower Lakes, the Mississippi, and the South Atlantic States. It was deficient in New Brunswick, southern California, and Arizona. The greatest excesses were: Toledo, 0.08; Indianapolis, 0.07; St. Johns, N. F., Buffalo, Erie, Detroit, Columbus, Ohio, Cincinnati, Spokane, and Charleston, 0.06. The greatest deficits were: Nantucket, 0.10; Chatham, 0.08; Quebec and Portland, Me., 0.06; Father Point, Yarmouth, Yuma, and San Diego, 0.05.

As compared with the preceding month of February, the pressures reduced to sea level show a decided rise throughout the Mississippi and Missouri valleys, Alberta, and eastward to the Atlantic; but a decided fall on the Pacific Coast and Rocky Mountain Plateau. The greatest rises were: St. Johns, N. F., 0.28; White River and Saugeen, 0.19; Alpena, 0.18; Sault Ste. Marie and Toronto, 0.17; Port Stanley, Parry Sound, Buffalo, and Marquette, 0.16. The greatest falls were: Roseburg, 0.18; Salt Lake City and Eureka, 0.17; Winnemucca and Carson City, 0.16; Redbluff and Elpaso, 0.14.

AREAS OF HIGH AND LOW PRESSURE.

By Prof. H. A. HAZEN.

During the month eight highs and ten lows have been definitely outlined on Charts I and II. The principal facts regarding the origin and disappearance, the continuance and velocity of these highs and lows are given in the accompanying table. While we speak of the motion of these highs and lows as of definite traveling conditions in the atmosphere, it should be noted that in no sense are we to suppose that there is a transport of columns or of masses of air from one region to another. It is well known that the velocity of the current increases markedly as one rises in the atmosphere and at about 6,000 feet, this velocity is about double that at the earth's surface. Moreover, it is also known that the direction of the current at 6,000 feet is often at right angles to the trajectory of the high or low. The cause of the apparent motion of highs and lows as they appear on our weather maps, has never been ascertained, but it is becoming quite common now to regard these conditions as in the nature of enormous waves in the atmosphere in which there is no motion of the air bodily in any direction. The following is a short description of the highs and lows noted during the month:

HIGH AREAS.

I.—First noted to the north of Montana a. m. of the 1st. Its motion was east-southeast, and it was last noted off the middle Atlantic Coast p. m. of the 6th.

II.—Like the last, was first noted to the north of Montana a. m. of the 5th. Its motion was southeast, and it reached the south Atlantic Coast p. m. of the 9th.

III.—This was the only high of the month that originated off the Pacific Coast. First noted a. m. of the 9th. It had a very slow motion eastward, and was last noted in the middle Plateau Region a. m. of the 11th.

IV.—First noted in Manitoba a. m. of the 10th. Its motion was at first south of east, and then north of east. It was last noted in the Gulf of St. Lawrence a. m. of the 16th.

V.—First noted to the north of Montana a. m. of the 13th. Its motion was first south-southeast, reaching Texas a. m. of the 16th; thence it moved northeast, disappearing off Nova Scotia a. m. of the 19th.

VI.—First noted in Montana p. m. of the 16th. Its motion was southeastward, and it was last seen off the south Atlantic Coast a. m. of the 22d.

VII.—Was first noted to the north of Montana a. m. of the 21st. Its motion was a little south of east, and it was last noted off the Massachusetts coast a. m. of the 25th. The severest cold wave of the month accompanied this high. A temperature fall of 42° in twenty-four hours was reported from Williston, p. m. of the 21st.

VIII.—First noted to the north of Montana a. m. of the 25th. This was the fifth high of the month that came from this region. The motion, at first a little southeast, turned to north of east, and it was last noted in the Gulf of St. Lawrence a. m. of the 30th.

LOW AREAS.

I.—This storm is a continuation of No. XIV of the February REVIEW. While its velocity in February was over 32 miles per hour, in this month it was but a little above 8 miles. This slowing up was due, in part, to an obstruction from a nearly stationary high over Newfoundland. The path from New York a. m. of the 1st, was a little east of north, and it was last noted a. m. of the 5th off Nova Scotia.

II.—Began a. m. of the 2d, off the middle Pacific Coast. Its path was a little north of east, and it was last noted over Newfoundland a. m. of the 9th.

III.—First noted off the north Pacific Coast, a. m. of the 5th. Its motion was east-southeast, and it was last noted p. m. of the 10th in Virginia.

IV.—This storm gave rise to Storm Bulletin No. 2 of 1896, and many important facts may be gleaned from that. It was first noted in south Texas a. m. of the 10th, where the lowest pressure was 29.78 inches. It developed very rapidly in intensity and moved with a velocity of over 40 miles per hour. In thirty-six hours the pressure at the center had fallen to 29.01, and the next morning there was a still farther fall to 28.90. The path was toward the northeast, and it was last noted on the Gulf of St. Lawrence p. m. of the 12th. Very heavy rains accompanied this storm. On the morning of the 11th, 3.20 inches had fallen at New Orleans and 5.08 at Pensacola in twenty-four hours. A wind of 72 miles per hour was reported from Block Island p. m. of the 11th.

V.—First noted in the southern Plateau Region a. m. of the 13th. Its path was first east, reaching the Mississippi Valley p. m. of the 15th; thence it moved northeast, disappearing in the Gulf of St. Lawrence p. m. of the 17th.

VI.—This storm originated to the north of Montana p. m. of the 15th. The path was first in a southeast direction, reaching Louisiana a. m. of the 18th; thence the direction was northeast, and it was last seen in the Gulf of St. Lawrence a. m. of the 21st. A rainfall of 3.52 inches was reported from New Orleans p. m. of the 18th, and a wind velocity of 68 miles from New York p. m. of the 19th. This storm also gave rise to a special Storm Bulletin, No. 3, which gives many additional facts.

VII.—Was first noted to the north of Montana a. m. of the 19th. Its path was eastward, and it was last seen over Newfoundland p. m. of the 22d.

VIII.—Like the last two this storm was first noted to the north of Montana p. m. of the 23d. The path was eastward, disappearing in the Gulf of St. Lawrence p. m. of the 27th.

IX.—First noted to the north of Montana p. m. of the 25th. It had a very slow motion a little south of east, and disappeared to the north of Lake Superior p. m. of the 29th.

X.—First noted in north Montana a. m. of the 30th. It moved southeast and was central in Iowa p. m. of the 31st. Its further course will be described in the April REVIEW.

Movements of centers of areas of high and low pressure.

Number.	First observed.			Last observed.			Path.		Average velocities.	
	Date.	Lat. N.	Long. W.	Date.	Lat. N.	Long. W.	Length.	Duration.	Daily.	Hourly.
High areas.		°	°		°	°	*Miles.*	*Days.*	*Miles.*	*Miles.*
I	1, a. m.	54	116	6, p. m.	37	74	2,890	5.5	525	21.9
II	5, a. m.	51	115	9, p. m.	29	79	2,440	4.5	541	22.5
III	8, p. m.	43	125	11, a. m.	41	111	970	2.5	388	16.2
IV	10, a. m.	53	105	16, a. m.	47	60	3,300	6.0	550	22.9
V	13, a. m.	52	117	19, a. m.	46	59	4,050	6.0	675	28.1
VI	16, p. m.	48	112	22, a. m.	32	77	2,980	5.5	530	22.1
VII	21, a. m.	53	109	25, a. m.	41	69	2,480	4.0	620	25.8
VIII	25, a. m.	52	108	30, a. m.	46	59	3,410	5.0	683	28.5
Sums							22,460	39.0	4,512	18.80
Mean of 8 paths									564	23.5
Mean of 39 days									576	24.0
Low areas.										
I	1, a. m.	42	75	5, a. m.	45	60	800	4.0	199	8.3
II	2, a. m.	42	125	9, a. m.	48	56	4,030	7.0	576	24.0
III	5, a. m.	48	128	10, p. m.	38	79	2,960	5.5	539	22.5
IV	10, a. m.	27	99	12, p. m.	48	64	2,430	2.5	972	40.5
V	13, a. m.	37	111	17, p. m.	47	59	3,360	4.5	747	31.1
VI	15, p. m.	52	115	21, a. m.	49	60	4,130	5.5	751	31.3
VII	19, a. m.	53	116	22, p. m.	47	55	2,810	3.5	804	33.5
VIII	23, p. m.	52	113	27, p. m.	50	63	3,100	4.0	774	32.3
IX	25, p. m.	53	114	29, p. m.	50	85	1,830	4.0	459	19.1
X	30, a. m.	49	109	31, p. m.	42	92	1,310	1.5	872	36.3
Sums							26,760	42.0		
Mean of 10 paths									669.3	27.9
Mean of 42 days									637.1	26.5

LOCAL STORMS.

By A. J. HENRY, Chief of Division of Records and Meteorological Data.

Atmospheric conditions favorable to the development of local storms obtained on the 18th, 28th, and 29th. On the first-named date three small frame houses and one frame church were demolished by the wind at Baton Rouge, La. Earlier in the day a schoolhouse was overturned and four dwellings were wrecked near Beaumont, Tex. Several people were injured, but no lives were lost.

On the 28th severe local storms were reported from Alton, Ill., near Westalton, St. Charles County, Mo., and Oregon, Ill. Some tornado characteristics were present, especially at Oregon, Ill. No lives were lost, and the property loss was comparatively small, $6,000.

On the next day a severe storm was reported in the vicinity of Rural Retreat, Va. One life was lost, and the loss to standing timber, fences, and buildings was estimated at $10,000.

The casualties during the month due to violent storms, lightning, and floods, were as follows: Violent storms, 1; lightning, 5; drowning, 8.

TEMPERATURE OF THE AIR.

[In degrees Fahrenheit.]

The mean temperature is given for each station in Table

II, for voluntary observers. Both the mean temperatures and the departures from the normal are given in Table I for the regular stations of the Weather Bureau.

The *monthly mean temperatures* published in Table I, for the regular stations of the Weather Bureau, are the simple means of all the daily maxima and minima; for voluntary stations a variety of methods of computation is necessarily allowed, as shown by the notes appended to Table II.

The *regular diurnal period* in temperature is shown by the hourly means given in Table V for 29 stations selected out of 82 that maintain continuous thermograph records.

The *distribution of the observed monthly mean* temperature of the air over the United States and Canada is shown by the dotted isotherms on Chart IV; the lines are drawn over the Rocky Mountain Plateau Region, although the temperatures have not been reduced to sea level, and the isotherms, therefore, relate to the average surface of the country occupied by our observers; such isotherms are controlled largely by the local topography, and should be drawn and studied in connection with a contour map.

The *highest mean temperatures* were: Key West, 70.6; Jupiter, 67.6; Yuma, 65.1; Corpus Christi, 63.4.

The *lowest mean temperatures* were: In the United States: Moorhead, 14.4. In Canada: Winnipeg, 9.6.

As compared with the normal for March the mean temperatures for the current month were in excess on the coast of California and some Plateau stations, but elsewhere generally deficient. The greatest excesses were: Elpaso, 2.3; Baker City, 1.9; Idaho Falls, 1.4; Los Angelos and Eureka, 1.3. The greatest deficits were: Huron, 7.8; Williston, 6.9; Lexington, 6.7; North Platte, 6.6; Pittsburg, 6.4; Havre, Moorhead, and Parkersburg, 6.1; Cincinnati, 6.0.

Considered by districts the mean temperatures for the current month show departures from the normal as given in Table I. The greatest positive departure was: South Pacific, 1.2. The greatest negative departures were: Northern Slope, 5.5; Ohio Valley and Tennessee, 4.8; lower Lake, 4.4.

The *years of highest and lowest mean temperatures* for March are shown in Table I of the REVIEW for March, 1894. The mean temperature for the current month was not the highest on record at any regular station of the Weather Bureau. It was the lowest on record at Northfield, 19.9; Woods Hole, 31.6; Harrisburg, 32.8; Parkersburg, 35.2; Lexington, 37.7; Port Angeles, 39.6; Tatoosh Island, 42.0.

The *maximum and minimum temperatures* of the current month are given in Table I. The highest maxima were: 99, Yuma (25th); 92, Phœnix (25th); 90, Abilene (21st), and San Antonio (31st); 89, Los Angeles (24th), Elpaso (25th); 88, Savannah and Jacksonville (31st). The lowest maxima were: 44, Sault Ste. Marie (21st); 48, Eastport (26th), Moorhead (24th); 49, Marquette (30th); 50, Northfield (1st), Oswego (30th). The highest minima were: 54, Key West (21st); 45, Galveston (16th); 44, Port Eads (frequently); 43, Jupiter (21st); 42, Corpus Christi (16th); 41, New Orleans (20th), San Diego (4th). The lowest minima were: —32, Havre (3d); —28, Moorhead (13th); —18, Helena (3d); —16, Sault Ste. Marie and Huron (13th), and Williston (frequently).

The *years of highest maximum and lowest minimum temperatures* are given in the last four columns of Table I. During the current month the maximum temperatures were the highest on record at: Savannah and Jacksonville, 88; Montgomery, 87; Meridian, 85; Elpaso, 89. The minimum temperatures were the lowest on record for this month at: Northfield, —15; Harrisburg, 6; Moorhead, —28; Lander, —22; Idaho Falls, —15; Tatoosh Island, 24; Port Angeles, 18; Fort Canby, 22; Astoria, 24; Portland, Oreg., 20; Roseburg, 18; Eureka, 29; Redbluff, 26; San Francisco, 33.

The greatest daily range of temperature and the extreme monthly ranges are given for each of the regular Weather Bureau stations in Table I, which also gives data from which may be computed the extreme monthly ranges for each station. The largest values of the greatest daily ranges were: Dodge City, 53; North Platte, 50; Pueblo, 49; Moorhead, 47; Huron, 46; Pierre, and Amarillo, 45. The smallest values were: Tatoosh Island, 14; Key West, 15; Galveston, 16; Block Island, 18; Point Reyes Light, 19; Port Eads, 20. Among the extreme monthly ranges the largest values were: Havre, 96; Huron, 90; Miles City, 89; North Platte, 88; Pierre, 86. The smallest values were: Galveston, 27; Key West, 28; Tatoosh Island, 31; Port Eads and Neahbay, 33; Nantucket and Hatteras, 34.

The *accumulated monthly departures* from normal temperatures from January 1 to the end of the current month are given in the second column of the following table, and the averages are given in the third column. The latter may serve for comparison with the departures of current conditions of vegetation from the normal condition.

Districts.	Accumulated departures.		Districts.	Accumulated departures.	
	Total.	Average.		Total.	Average.
	°	°		°	°
West Gulf	+ 0.6	+ 0.2	New England	— 4.9	— 1.6
Upper Lake	+ 4.5	+ 1.5	Middle Atlantic	— 5.8	— 1.9
North Dakota	+ 6.0	+ 2.0	South Atlantic	— 5.6	— 1.9
Upper Mississippi	+ 6.9	+ 2.3	Florida Peninsula	— 8.8	— 2.9
Missouri Valley	+10.0	+ 3.3	East Gulf	— 6.9	— 2.3
Northern Slope	+11.1	+ 3.7	Ohio Valley and Tenn.	— 4.1	— 1.4
Middle Slope	+11.3	+ 3.8	Lower Lake	— 4.7	— 1.6
Abilene (southern Slope)	+ 5.6	+ 1.9			
Southern Plateau	+ 6.0	+ 2.0			
Middle Plateau	+10.9	+ 3.6			
Northern Plateau	+21.0	+ 7.0			
North Pacific	+ 4.7	+ 1.6			
Middle Pacific	+ 6.7	+ 2.2			
South Pacific	+ 9.0	+ 3.0			

The limit of freezing weather is shown on Chart VI by the isotherm of minimum 32°, and the approximate limit of frost by the isotherm of minimum 40°. These minimum temperatures are such as occur within the thermometer shelters of the Weather Bureau stations.

MOISTURE.

The *quantity of moisture* in the atmosphere at any time may be expressed by the weight of the vapor coexisting with the air contained in a cubic foot of space, or by the tension or pressure of the vapor, or by the temperature of the dew-point. The mean dew-points for each station of the Weather Bureau, as deduced from observations made at 8 a. m. and 8 p. m., daily, are given in Table I.

The *rate of evaporation* from a special surface of water on muslin at any moment determines the temperature of the wet-bulb thermometer, but a properly constructed evaporometer may be made to give the *quantity* of water evaporated from a similar surface during any interval of time. Such an evaporometer, therefore, would sum up or integrate the effect of those influences that determine the temperature as given by the wet bulb; from this quantity the *average humidity of the air* during any given interval of time may be deduced.

Measurements of evaporation within the thermometer shelters are difficult to make so as to be comparable at temperatures above and below freezing, and may be replaced by computations based on the wet-bulb temperatures. The absolute amount of evaporation from natural surfaces not protected from wind, rain, sunshine, and radiation, are being made at a few experimental stations and will be discussed in special contributions.

Sensible temperatures.—The sensation of temperature experienced by the human body and ordinarily attributed to the

condition of the atmosphere depends not merely on the temperature of the air, but also on its dryness, on the velocity of the wind, and on the suddenness of atmospheric changes, all combined with the physiological condition of the observer. A complete expression for the relation between atmospheric conditions and nervous sensations has not yet been obtained.

PRECIPITATION.

[In inches and hundredths.]

The *distribution of precipitation* for the current month, as determined by reports from about 2,500 stations, is exhibited on Chart III. The numerical details are given in Tables I, II, and III. The total precipitation for the current month was heaviest (from 9 to 12 inches) in a narrow belt on the western slope of the Appalachians, stretching from central Tennessee to southwest Virginia. Equally heavy rain fell over a small area of the western slope of the Sierra Nevada, in central California. The largest values at regular stations were: Halifax, 8.8; Portland, Me., 8.0; Neahbay, 7.2 Yarmouth, 7.0; Eureka and Sydney, 6.9.

The *current departures* from the normal precipitation are given in Table I, which shows that there was a slight excess in New England and in several smaller regions, but, in general, there was a slight deficiency. Large excesses were: Portland, Me., 4.6; Rochester, 3.4; Northfield, 3.1. Large deficits were: Cape Henry and Augusta, 3.8; Neahbay, 3.3; Charlotte and Chattanooga, 3.2; Vicksburg, 3.1; Columbia, 3.0.

The *average departure* for each district is also given in Table I. By dividing these by the respective normals the following corresponding percentages are obtained (precipitation is in excess when the percentages of the normals exceed 100):

Above the normal: New England, 128; middle Atlantic, 105; lower Lake, 140; North Dakota, 178; northern Slope, 204; middle Plateau, 130; southern Pacific, 127.

Normal: Florida Peninsula and northern Plateau.

Below the normal: south Atlantic, 54; east Gulf, 85; west Gulf, 73; Ohio Valley and Tennessee, 98; upper Lake, 67; upper Mississippi, 73; Missouri Valley, 73; middle Slope, 63; southern Slope (Abilene), 9; southern Plateau, 63; north Pacific, 72; middle Pacific, 93.

The years of greatest and least precipitation for March are given in the REVIEW for March, 1890. The precipitation for the current month was the greatest on record at: Portland, Me., 8.02; Northfield, 6.41; Cheyenne, 2.06; Huron, and Helena, 1.71; Williston, 1.80. It was the least on record at: Cape Henry, 1.38; Hannibal, 0.92; Elpaso, T.

The total accumulated monthly departures from normal precipitation from January 1 to the end of the current month are given in the second column of the following table; the third column gives the ratio of the current accumulated precipitation to its normal value.

Districts.	Accumulated departures.	Accumulated precipitation.	Districts.	Accumulated departures.	Accumulated precipitation.
	Inches.	*Per ct.*		*Inches.*	*Per ct.*
Middle Atlantic	+ 0.40	104	New England	— 0.80	93
Florida Peninsula	+ 0.40	105	South Atlantic	— 1.70	87
Lower Lakes	+ 0.80	110	East Gulf	— 2.30	86
North Dakota	— 1.10	153	West Gulf	— 0.80	93
Northern Slope	— 0.40	121	Ohio Valley and Tenn	— 3.90	79
Middle Plateau	— 0.30	107	Upper Lakes	— 1.80	72
North Pacific	+ 3.20	114	Upper Mississippi	— 2.20	64
			Missouri Valley	— 1.70	63
			Middle Slope	— 1.70	50
			Abilene (southern Slope)	— 1.30	64
			Southern Plateau	— 0.40	75
			Northern Plateau	— 1.40	76
			Middle Pacific	— 1.00	93
			South Pacific	— 1.50	77

Details as to *excessive precipitation* are given in Tables XII and XIII.

The *total monthly snowfall* at each station is given in Table II. Its geographical distribution is shown on Chart VI. The southern limit of freezing temperatures and possible snow is shown on this chart by the isotherm of minimum 32°.

The depth of snow on the ground at the close of the month is shown on Chart VII.

HAIL.

The following are the dates on which hail fell in the respective States:

Alabama, 6, 11, 12, 31. Arizona, 5. Arkansas, 5, 6, 31. California, 1 to 4, 14, 26, 27, 28. Colorado, 22, 25, 27, 28. District of Columbia, 19. Florida, 10. Georgia, 18, 19, 30. Idaho, 12, 20, 24. Illinois, 26 to 29. Indiana, 6, 28, 29. Iowa, 27, 28, 30, 31. Kansas, 22, 27, 31. Kentucky, 29. Louisiana, 10, 17, 18. Mississippi, 10, 17, 31. Missouri, 27, 28, 29, 31. Nebraska, 27. Nevada, 25. New Hampshire, New Mexico, 2. New York, 30. North Carolina, 1, 11, 12, 18. Ohio, 26, 28, 29. Oklahoma, 1. Oregon, 29. South Dakota, 27. Tennessee, 1, 29, 30. Texas, 10, 11. Virginia, 29, 30. Washington, 6, 7, 20, 28, 29. West Virginia, 29. Wisconsin, 28, 31.

SLEET.

The following are the dates on which sleet fell in the respective States:

Alabama, 11, 12, 19. Arkansas, 4, 12 to 15, 23. California, 1, 2, 3. Colorado, 20, 22, 25, 28, 31. Connecticut, 2, 11, 16, 19. Delaware, 10, 11, 23. District of Columbia, 11, 23. Georgia, 11, 18, 19. Idaho, 1, 5, 24 to 30. Illinois, 3, 4, 5, 10, 14, 15, 18, 22, 23, 26. Indiana, 1, 6. Indian Territory, 14, 15. Iowa, 4, 5, 11, 27, 31. Kansas, 1 to 4, 6, 13, 14, 17, 21, 22, 23, 31. Kentucky, 3, 5, 11, 14, 19, 23. Louisiana, 12. Maine, 3, 4, 7, 12, 27, 29. Maryland, 1, 11, 16, 19, 23, 24, 26. Massachusetts, 2, 7, 11, 15, 16, 17, 19, 29. Michigan, 5, 6, 25, 28, 29, 31. Minnesota, 5, 18, 27 to 31. Mississippi, 3, 11, 18, 19. Missouri, 2 to 5, 8, 11 to 15, 22, 23, 27. Montana, 11, 13, 30. Nebraska, 1 to 5, 12, 17, 18, 22, 28, 30, 31. Nevada, 1, 2, 4, 8, 16, 26 to 30. New Hampshire, 6, 7, 19, 26, 29, 30. New Jersey, 1, 10 to 13, 15, 16, 23, 24. New Mexico, 4, 5, 17. New York, 1, 2, 7, 10, 11, 12, 16, 19, 29, 30. North Carolina, 3, 11, 23, 24. North Dakota, 25, 28, 29, 30. Ohio, 1, 5, 6, 16, 24, 26. Oklahoma, 2, 3, 14, 15, 18. Oregon, 1, 2, 5, 6, 7, 26 to 30. Pennsylvania, 1, 7, 10, 11, 15, 16, 19, 26. South Carolina, 13, 24. South Dakota, 4, 15, 31. Tennessee, 3, 11, 15, 19, 23, 24. Texas, 2, 3, 4, 6, 15. Utah, 4, 10, 17, 28, 30. Vermont, 7, 19, 29, 30, 31. Virginia, 1, 11, 26. Washington, 6, 27, 29, 30. West Virginia, 1, 6, 10, 15, 23. Wisconsin, 5, 6, 9, 25, 27, 30, 31.

WIND.

The *prevailing winds* for March, 1896, viz, those that were recorded most frequently, are shown in Table I for the regular Weather Bureau stations.

The *resultant winds*, as deduced from the personal observations made at 8 a. m. and 8 p. m., are given in Table IX. These latter resultants are also shown graphically on Chart IV, where the small figure attached to each arrow shows the number of hours that this resultant prevailed, on the assumption that each of the morning and evening observations represents one hour's duration of a uniform wind of average velocity. These figures indicate the relative extent to which winds from different directions counterbalanced each other.

The *diurnal variation* in the velocity of the wind is shown in Table VII, which gives the total movement for each hour of seventy-fifth meridian time, as deduced from self-registering anemometers at about 136 stations.

HIGH WINDS.

Maximum wind velocities of 50 miles or more per hour were reported at regular stations of the Weather Bureau as follows (maximum velocities are averages for five minutes;

extreme velocities are gusts of shorter duration, and are not given in this table):

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
		Miles				*Miles*	
Amarillo, Tex	13	50	e.	Hatteras, N. C.	17	54	n.
Do.	17	52	n.	Huron, S. Dak	27	54	se.
Do.	27	60	w.	Kittyhawk, N. C.	11	58	sw.
Do.	28	56	w.	Do.	19	50	se.
Do.	31	62	n.	Marquette, Mich.	24	52	s.
Baltimore, Md.	19	50	s.	New Haven, Conn.	11	50	ne.
Block Island, R. I.	11	72	ne.	New York, N. Y.	2	70	w.
Boston, Mass.	11	50	ne.	Do.	3	60	nw.
Buffalo, N. Y.	7	54	w.	Do.	4	72	nw.
Cheyenne, Wyo.	7	50	w.	Do.	5	53	nw.
Do.	27	52	nw.	Do.	19	66	se.
Chicago, Ill.	21	57	s.	Do.	26	55	nw.
Do.	25	57	sw.	Do.	27	54	nw.
Cleveland, Ohio	19	52	nw.	Philadelphia, Pa.	3	50	nw.
Denver, Colo.	25	58	nw.	Pueblo, Colo.	17	50	n.
Do.	27	60	sw.	Tatoosh Island, Wash.	1	50	e.
Dodge City, Kan.	27	50	sw.	Do.	2	52	ne.
Eastport, Me.	1	68	e.	Williston, N. Dak.	21	56	nw.
Do.	12	53	sw.	Winnemucca, Nev.	6	50	sw.
Do.	19	55	se.	Woods Hole, Mass.	2	50	nw.
Elpaso, Tex.	4	62	sw.	Do.	3	58	nw.
Do.	17	54	nw.	Do.	4	56	nw.
Do.	27	58	w.	Do.	12	50	w.
Fort Canby, Wash.	28	57	s.	Do.	20	55	sw.

SUNSHINE AND CLOUDINESS.

The quantity of sunshine, and therefore of heat, received by the atmosphere as a whole is very nearly constant from year to year, but the proportion received by the surface of the earth depends upon the absorption by the atmosphere, and varies largely with the distribution of cloudiness. The sunshine is now recorded automatically at 17 regular stations of the Weather Bureau by its photographic, and at 21 by its thermal effects. At one station records are kept by both methods. The photographic record sheets show the apparent solar time, but the thermometric sheets show seventy-fifth meridian time; for convenience the results are all given in Table XI for each hour of local mean time.

Photographic and thermometric registers give the duration of that intensity of sunshine which suffices to make a record, and, therefore, they generally fail to record for a short time after sunrise and before sunset, because, even in a cloudless sky, the solar rays are then too feeble to affect the self-registers. If, therefore, such records are to be used for determining the amount of cloudiness, they must be supplemented by special observations of the sky near the sun at these times. The duration of clear sky thus specially determined constitutes the so-called twilight correction (more properly a low-sun correction), and when this has been applied, as has been done in preparing Table XI, there results a complete record of the clearness of the sky from sunrise to sunset in the neighborhood of the sun. The twilight correction is not needed when the self-registers are used for ascertaining the duration of a special intensity of sunshine, but is necessary when the duration of cloudiness is alone desired, as is usually the case.

The average cloudiness of the whole sky is determined by numerous personal observations at all stations during the daytime, and is given in the column "average cloudiness" in Table I; its complement, or percentage of clear sky, is given in the last column of Table XI.

COMPARISON OF DURATIONS AND AREAS.

The sunshine registers give the *durations* of effective sunshine whence the duration relative to possible sunshine is derived; the observer's personal estimates give the percentage of *area* of clear sky. These numbers have no necessary relation to each other, since stationary banks of clouds may obscure the sun without covering the sky, but when all clouds have a steady motion past the sun and are uniformly scattered over the sky, the percentages of duration and of area agree closely. For the sake of comparison, these percentages have been brought together, side by side, in the following table, from which it appears that, in general, the instrumental records of percentages of durations of sunshine are almost always larger than the observers' personal estimates of percentages of area of clear sky; the average excess for March, 1896, is 10 per cent for photographic and 11 per cent for thermometric records. The details are shown in the following table, in which the stations are arranged according to the greatest possible duration of sunshine, and not according to the *observed* duration as heretofore.

Difference between instrumental and personal observations of sunshine.

Stations.	Apparatus.	Total possible duration.	Personal estimated area of clear sky.	Instrumental record of sunshine.			
				Photographic.	Difference.	Thermometric.	Difference
		Hrs.	%	%	%	%	%
Galveston, Tex.	P.	372.6	46	50	+4	.....	.....
New Orleans, La.	T.	372.5	45	.....	.....	49	+4
Atlanta, Ga.	T.	372.3	42	.....	.....	65	+23
Phœnix, Ariz.	P.	372.3	53	75	+22	.....	.....
San Diego, Cal.	P.	372.3	52	68	+16	.....	.....
Wilmington, N. C.	T.	372.2	61	.....	.....	72	+11
Little Rock, Ark.	T.	372.1	33	.....	.....	48	+15
Savannah, Ga.	P.	372.1	58	69	+11	.....	.....
Vicksburg, Miss.	T.	372.1	51	.....	.....	57	+6
Santa Fe, N. Mex.	P.	371.9	55	67	+12	.....	.....
Baltimore, Md.	T.	371.4	49	.....	.....	52	+3
Cincinnati, Ohio	T.	371.4	41	.....	.....	49	+8
Dodge City, Kans.	P.	371.4	57	69	+12	.....	.....
Kansas City, Mo.	P.	371.4	47	53	+6	.....	.....
Louisville, Ky.	T.	371.4	39	.....	.....	54	+15
St. Louis, Mo.	T.	371.4	48	.....	.....	58	+10
San Francisco, Cal.	T.	371.4	46	.....	.....	51	+5
Washington, D. C.	P.	371.4	57	57	0	.....	.....
Columbus, Ohio	T.	371.2	37	.....	.....	49	+12
Denver, Colo.	P.	371.2	43	66	+23	.....	.....
Eureka, Cal.	P.	371.2	44	45	+1	.....	.....
New York, N. Y.	T.	371.2	47	.....	.....	55	+8
Philadelphia, Pa.	T.	371.2	49	.....	.....	64	+15
Salt Lake City, Utah	P.	371.2	26	48	+22	.....	.....
Buffalo, N. Y.	T.	370.9	36	.....	.....	53	+17
Rochester, N. Y.	T.	370.9	49	.....	.....	58	+9
Boston, Mass.	T.	370.8	45	.....	.....	56	+11
Chicago, Ill.	T.	370.8	54	.....	.....	65	+11
Cleveland, Ohio	P.	370.8	32	42	+10	.....	.....
Des Moines, Iowa.	T.	370.8	36	.....	.....	51	+15
Detroit, Mich.	T.	370.8	50	.....	.....	57	+7
Eastport, Me.	P.	370.7	32	46	+14	.....	.....
Northfield, Vt.	P.	370.7	32	40	+8	.....	.....
Portland, Me.	T.	370.7	43	.....	.....	55	+12
Bismarck, N. Dak.	P.	370.3	44	50	+6	.....	.....
Helena, Mont.	P.	370.3	50	51	+1	.....	.....
Portland, Oreg.	T.	370.3	44	.....	.....	43	+1
	P.	370.3	44	44	0	.....	.....

ATMOSPHERIC ELECTRICITY.

Numerical statistics relative to auroras and thunderstorms are given in Table X, which shows the number of stations from which meteorological reports were received, and the number of such stations reporting thunderstorms (T) and auroras (A) in each State and on each day of the month, respectively.

The dates on which reports of thunderstorms for the whole country were most numerous were: 27th, 118; 28th, 164; 29th, 152; 31st, 127.

Thunderstorm reports were most numerous in Illinois, 85; Ohio, 89; Tennessee, 69.

Thunderstorms were most frequent in: Texas, 14 days; Illinois and Mississippi, 13.

Auroras.—The evenings on which bright moonlight must have interfered with observations of faint auroras are assumed to be the four preceding and following the date of full moon, viz, from the 1st to the 3d, and also the 24th to the 31st, inclusive. On the remaining twenty days of this month 362 reports were received, or an average of about 18 per day. The dates on which the number of reports especially exceeded

this average were: 4th, 102; 6th, 37; 11th, 52; 13th, 72; 14th, 41.

Auroras were reported by a large percentage of observers in: North Dakota, 165; Minnesota, 61; Wisconsin, 57; Michigan, 54.

Auroras were reported most frequently in: North Dakota, 16 days; Iowa, Michigan, and Minnesota, 10.

CANADIAN REPORTS.

Thunderstorms and auroras. No thunderstorms were reported.

Auroras were reported as follows: St. Johns, 13th; Halifax, 13th; Yarmouth, 31st; St. Andrews, 13th, 14th; Charlottetown, 13th, 14th; Father Point, 6th, 14th, 15th; Quebec, 13th, 14th, 28th, 31st; Montreal, 14th, 22d; Rockliffe, 4th, 13th, 14th, 31st; Toronto, 4th, 13th, 14th; White River, 4th, 12th, 13th, 14th, 19th, 20th, 21st; Port Stanley, Saugeen, and Parry Sound, 4th; Port Arthur, 12th, 13th, 14th, 17th, 26th, 27th; Winnipeg, 3d, 6th, 7th, 10th to 14th, 20th, 25th, 31st; Minnedosa, 3d, 6th to 12, 15th, 26th, 30th; Qu'Appelle, 2d, 3d, 11th; Medicine Hat, 5th, 12th; Swift Current, 11th; Prince Albert, 3d, 4th, 11th; Battleford, 4th, 7th, 14th, 18th, 28th.

INLAND NAVIGATION.

The *extreme and average stages of water* in the rivers during the current month are given in Table VIII, from which it appears that the only river that rose above the danger line was the Ohio, at Evansville, Ind., which on the 25th attained the gauge reading of 32.1. In a number of cases, however, the rivers rose to a point but very little below danger line, for example, the Mississippi, at New Orleans, attained 12.6 on the 1st; the Monongahela, at Pittsburg, 20.8 on the 31st; the Big Sandy, at Louisa, Ky., 33.4 on the 31st, and the Tennessee, at Johnsonville, 20.9 on the 23d. The Mississippi, at St. Paul, La Crosse, and Dubuque, became sufficiently free from ice to allow observations to be taken on the 10th, 22d, and 23d, respectively. Heavy floods and great damage occurred on most of the rivers of New England on the 1st, 2d, and 3d of the month. As the Weather Bureau has no river stations in this region we can only summarize the newspaper accounts which state that the Connecticut, at Hartford, was 25 feet above low water, and at Bellows Falls, Vt., 17 feet. At Hudson, N. Y., the freshet in the Hudson River reached proportions never before known, but the ice in the river remained firm; at Albany the Hudson rose to 16 feet 10 inches above the normal level of the stream, or two inches below the high-water mark of 1893. The Mohawk River, at Rome and Schenectady, was the highest known in many years. The Passaic River, at Paterson, N. J., attained a point 3 feet lower than the great freshet of February. The Merrimac, at Lowell, reached 12 feet 9 inches on the dam, or nearly a foot beyond the freshet of 1895; at Lawrence and Haverhill, Mass., the Merrimac reached the highest point ever known.

The heavy rains in eastern Tennessee and southwestern Virginia, on the 29th, caused a number of landslides and the loss of bridges throughout that region. Five persons were drowned by the floods in Russell County, Va., two others near Abrams Falls, and two lives were lost in Clay County, Ky., by the sudden flooding of Sextons Creek. The water is reported to have risen so rapidly that it seemed as if it were a solid wall 15 or 20 feet high. Several other dwelling houses and a number of outbuildings in the valley of the creek were washed away.

ICE IN RIVERS AND HARBORS.

The state of ice in rivers and harbors is shown in detail on the Charts of Snow on the Ground, published weekly by the Weather Bureau, from which it appears that there was a general diminution in the thickness of ice, and on March 30 the condition was about as follows: (Thickness in inches.)

Rivers and harbors were generally free from ice, except Buffalo, 6; Sault Ste. Marie, 22; and Duluth, 25. Fields of ice impeded navigation in all the lakes, but the prospects were good for an early opening. The Missouri and Mississippi rivers were free from ice.

ANCHOR ICE IN AQUEDUCTS.

Serious difficulty was caused by the formation of ice, and especially "anchor" ice, in the early portion of the month at Macopin Dam, on the Pequannock River, which supplies the city of Newark, N. J., with water. As the formation of "anchor" ice is still but little understood, and is liable to cause a great deal of trouble in reservoirs and water pipes, these occurrences deserve special study. It is stated that the gate screens and intake screens at the Macopin Dam and at the Clifton Avenue reservoir were suddenly and entirely choked up by the accumulation of anchor ice attached to the solid surfaces underneath the water surface. It is said that such trouble had never occurred before in this aqueduct, and it is hoped it will not occur again.

METEOROLOGY AND MAGNETISM.

By Prof. FRANK H. BIGELOW.

For a description of the methods of constructing the tables and curves of Chart V, see the WEATHER REVIEW for October, 1895, and January, 1896. The numbers in the columns H. and D. are added respectively to the mean values for Washington and Toronto, i. e., H=0.18250; D=175.0. The values of the vertical forces are omitted, as well as *dz. s. a*, which depend upon it. The month of March was characterized by very stagnant eastward circulation, and local rather than general weather conditions. The magnet watch also showed signs of inversion from the direct type, which had prevailed for several periods, to the inverse type, and was attended by considerable unsteadiness in the 24-hourly rates.

CLIMATE AND CROP SERVICE.

By JAMES BERRY, Chief of Climate and Crop Service Division.

The following extracts relating to the general weather conditions in the several States and Territories are taken from the monthly reports of the respective services.

Snowfall and rainfall are expressed in inches.

Alabama.—The mean temperature was 53.0°, or 1.1° below normal; the highest was 92°, at Jasper on the 29th, and the lowest, 20°, at Newburg on the 12th and 13th. The average precipitation was 5.10, or 0.66 less than normal; the greatest monthly amount was 10.05, at Daphne, and the least, 2.48, at Opelika.

Arizona.—The mean temperature was 57.6°, or 4.0° above normal; the highest was 103°, at Fort Mojave on the 25th, and the lowest, 2°, at Whipple Barracks on the 6th. The average precipitation was 0.44, or 0.65 less than normal; the greatest monthly amount was 1.44, at Oracle, and the least, 0.05, at Wilcox.

Arkansas.—The mean temperature was 48.7°, or 2.0° below normal; the highest was 85°, at Warren on the 29th, and at Camden and Washington on the 31st, and the lowest, 12°, at Keeses Ferry on the 13th. The average precipitation was 5.28, or 0.47 above normal; the greatest monthly amount was 7.88, at Russellville, and the least, 2.06, at Silver Springs.

California.—The mean temperature was 53.5°, or 0.5° above normal; the highest was 111°, at Ogilby on the 25th, and the lowest, 14° below

zero, at Bodie on the 5th. The average precipitation was 3.38, or 0.05 below normal; the greatest monthly amount was 24.85, at Fordyce Dam, while none occurred at Indio and Volcano Springs.

Colorado.—The month was warmer than the average in the mountain districts and the valleys of the Grand, Gunnison, and lower Arkansas; elsewhere the temperature was generally below normal; the highest was 84°, at Rocky Ford, Las Animas, and Minneapolis on the 25th, and the lowest, 20° below zero, at Alma on the 3d. It was unusually wet over the north-central section, the Divide, and throughout the mountain districts, being especially stormy over Lake and Summit counties. Marked deficiencies in precipitation occurred over the extreme southeastern, western, and northwestern counties. The greatest precipitation, 9.70, occurred at Climax, and the least, "trace," at Sagauche.

Florida.—The mean temperature was 63.0°, or 3.0° below normal; the highest was 93°, at Earnestville on the 31st, and the lowest, 29°, at Fort Meade and St. Francis on the 21st. The average precipitation was about 0.50 below normal; there were sections where it was decidedly in excess, and others where the deficiency was equally marked. The greatest amount was 10.57, at Milton, and the least, 0.55, at Manatee.

Georgia.—The mean temperature was 53.0°, or about 2.0° below normal; the highest was 91°, at Allentown on the 30th, and the lowest, 18°, at Clayton on the 21st. The average precipitation was 3.51, or about 1.00 below normal; the greatest monthly amount was 5.61, at Blakely, and the least, 1.41, at Augusta.

Idaho.—The mean temperature was 33.0°, or 0.9° above the mean of March, 1895; the highest was 80°, at Payette on the 29th, and the lowest, 33° below zero, at Junction on the 1st. The average precipitation was 1.95; the greatest monthly amount was 4.66, at Carriboo, and the least, 0.20, at Kootenai.

Indiana.—The mean temperature was 35.4°, or 2.5° below normal; the highest was 77°, at Mt. Vernon on the 31st, and the lowest, 3° below zero, at South Bend on the 20th. The average precipitation was 3.10, or 0.05 in excess of normal; the greatest monthly amount was 5.88, at Princeton, and the least, 1.55, at Lafayette.

Illinois.—The temperature during the month was uniformly low. The mean was 35.6°, or 2° below normal; the highest temperature was 79°, at Mt. Vernon on the 31st, and the lowest, 4° below zero, at Chemung on the 13th. The average precipitation was 1.84, or 0.94 below normal; the greatest monthly amount was 5.49, at Mt. Carmel, and the least, 0.43, at Bushnell and Glenwood.

Iowa.—The mean temperature was 30.9°, or about 1.0° below normal; the highest was 81°, at Belknap on the 30th, and the lowest, 12° below zero, at Rock Rapids on the 13th. The average precipitation was 1.10, or 0.97 below normal; the greatest monthly amount was 3.99, at Sidney, and the least, 0.16, at Keosauqua.

Kansas.—The mean temperature was 39.2°, or 2.0° below normal; the highest was 95°, at Macksville on the 27th, and the lowest, 5° below zero, at Goodland on the 18th. The average precipitation was 0.79, or 0.70 below normal; the greatest monthly amount was 3.60, at Eldorado, and the least, "trace," at Garden City, Greensburgh, and Macksville.

Kentucky.—The mean temperature was 41.1°, or 3.5° below normal; the highest was 80°, at Marrowbone and Middlesboro on the 29th, and at Pryorsburg on the 31st, and the lowest, 8°, at Sandy Hook on the 17th. The average precipitation was 6.16, or 1.86 above normal; the greatest monthly amount was 9.90, at Williamsburg, and the least, 3.32, at Princeton. The average snowfall for the State was 8 inches.

Louisiana.—The mean temperature was 58.3°, or 0.3° below normal; the highest was 90°, at Liberty Hill on the 31st, and the lowest, 22°, at Amite on the 20th. The average precipitation was 4.34, or 0.37 below normal; the greatest monthly amount was 9.00, at Melville, and the least, 0.70, at Napoleonville.

Maryland.—The mean temperature was 36.6°, or 4.0° below normal; the highest was 74°, at Wilmington, Del., on the 30th, and the lowest, 13° below zero, at Deer Park on the 14th. The average precipitation was 4.38, or 0.80 above normal; the greatest monthly amount was 6.80, at Sunnyside, and the least, 2.18, at Princess Anne. The average snowfall was 12.4 inches.

Michigan.—The mean temperature was 25.7°, or 3.0° below normal; the highest was 69°, at Birmingham on the 29th, and at Soldiers Home, Vandalia, and Mottville on the 31st, and the lowest, 19° below zero, at Boon and Iron River on the 13th. The average precipitation was 1.33, or 0.35 below normal; the greatest monthly amount was 2.45, at Olivet, and the least, 0.11, at Powers.

Minnesota.—The mean temperature was 21.4°; the highest was 64°, at New Ulm on the 30th, and the lowest, 37° below zero, at Koochiching on the 11th. The average precipitation was 1.97; the greatest monthly amount was 4.21, at Milan, and the least, 0.20, at Red Wing.

Mississippi.—The mean temperature was 54.2°, or 2.2° below normal; the highest was 88°, at Enterprise on the 30th, and at Vaiden on the 31st, and the lowest, 19°, at French Camp on the 13th. The average precipitation was 4.96, or 1.19 below normal; the greatest monthly amount was 9.09, at Woodville, and the least, 0.93, at Macon. An average depth of about 2 inches of snow fell over the northern portion of the State on the 12th.

Missouri.—The mean temperature was 39.0°, or 2.1° below normal; the highest was 82°, at Grovedale on the 18th, and at Humansville and Sarcoxie on the 31st, and the lowest, 2°, at Unionville on the 13th. The average precipitation was 2.03, or 0.59 less than normal; the greatest monthly amount was 8.70, at New Madrid, and the least, 0.57, at Downing and Darksville. The average snowfall was 5.2 inches.

Montana.—The mean temperature was 27.0°, or 1.0° below normal; the highest was 76°, at Wibaux on the 24th, and the lowest, 38° below zero, at Mussellshell on the 3d. The average precipitation was 1.01, or 0.25 above normal; the greatest monthly amount was 3.90, at Red Lodge, and the least, 0.16, at Fort Benton.

Nebraska.—The mean temperature was 30.5°, or 3.8° below normal; the highest was 90° at Benkleman on the 24th, and the lowest, 24° below zero, at Alliance on the 3d. The average precipitation was 1.45, or 0.27 above normal; the greatest monthly amount was 3.83, at Sutton, and the least, 0.35, at Wilsonville.

Nevada.—The mean temperature was 39.4°, or 1.0° above normal; the highest was 90°, at St. Thomas on the 24th, and the lowest, 18° below zero, at Stofiel on the 2d. The average precipitation was 1.15, or 0.11 below normal; the greatest monthly amount was 3.99, at Lewers Ranch, and the least, 0.22, at Wadsworth.

New England.—The temperature during March was considerably below normal throughout New England. The greatest departure from the average was —4.4° at Keene, N. H., while at Fairfield, Me., it was only 1.5° below the usual March conditions. The highest temperatures, with scarcely an exception, occurred on the 26th and 31st; the maximum reported was 66° at Chestnut Hill on the 26th. The minimum at most stations was recorded on the 14th, when an area of high barometer was central just west of us; the chief minimum was —20° at Berlin Mills, N. H.

March, like its immediate predecessor, was very stormy, and consequently the precipitation was excessive in all parts of New England. The heavy rain which commenced on the last day of February, caused, with the melting snows, dangerous floods which were accompanied by great financial loss in many places. At Lawrence the Merrimac River attained the highest point on record since the Essex Company's dam has been in existence, and many other places report all previous river records broken.

New Jersey.—The mean temperature was 34.0°, or 2.8° below normal; the highest was 70°, at Beverly on the 28th, and the lowest, 8° below zero, at River Vale on the 13th. The average precipitation was 5.34, or 1.56 above normal; the greatest monthly amount was 7.38, at River Vale, and the least, 3.14, at Cape May City.

New Mexico.—The mean temperature was about normal; the highest was 90°, at Eddy on the 26th, and the lowest, 2° below zero, at Hot Sulphur Springs on the 7th, and at Labelle on the 8th. The precipitation averaged slightly below normal, and was very unevenly distributed; the greatest monthly amount was 2.20 at Chama, while no rain fell at Bernalillo, Eddy, Engle, Galisteo, Lascruces, and Los Lunas.

North Carolina.—The mean temperature was 47.2°, or 0.9° below normal; the highest was 85°, at Sloan on the 30th, and at Lumberton on the 31st, and the lowest, 8°, at Jefferson and Linville on the 14th. The average precipitation was 2.59, or 1.95 below normal; the greatest monthly amount was 5.08, at Jefferson, and the least, 1.50, at Monroe.

North Dakota.—The mean temperature was 15.7°, or 8.9° below normal; the highest was 70°, at Fort Yates on the 25th, and the lowest, 35° below zero, at Woodbridge on the 12th, and at Gallatin on the 13th. The average precipitation was 1.18, or 0.47 above normal; the greatest monthly amount was 3.27, at Ashley, and the least, "trace," at Fort Yates.

Ohio.—The mean temperature was 32.4°, or 3.6° below normal; the highest was 73°, at Cherryfork on the 30th, and the lowest, 7° below zero, at Greenhill on the 13th. The average precipitation was 3.34, or 0.61 below normal; the greatest monthly amount was 5.36, at Hanging Rock, and the least, 1.38, at Oberlin. The average depth of snowfall was 14.8.

Oregon.—The mean temperature was 43.8°, or 0.3° above normal, the highest was 80°, at Langlois on the 10th, and the lowest, 13° below zero, at Joseph on the 2d. The average precipitation was 3.89, or 0.99 below normal; the greatest monthly amount was 8.99, at Glenora, and the least, 0.32, at Umatilla.

Oklahoma.—The mean temperature was 46.8°; the highest recorded was 90°, at Beaver on the 25th, and at Purcell on the 30th; the lowest was 9°, at Beaver on the 3d. The average precipitation was 1.09; the greatest monthly amount, 2.45, occurred at Vinita, and the least, 0.10, at Mangum and Woodward.

Pennsylvania.—The mean temperature was 30.6°, or 4.5° below normal; the highest was 69°, at Carlisle and Lock Haven on the 30th, and the lowest, 18° below zero, at Dyberry on the 14th. The average precipitation was 4.51, or 1.26 above normal; the greatest monthly amount was 7.98, at Blooming Grove, and the least, 1.77, at Altoona.

South Carolina.—The mean temperature was 53.1°, or 0.9° below normal; the highest was 93°, at Gillisonville on the 30th and 31st, and the lowest, 19°, at Greenville on the 21st. The average precipitation was 2.12, or 2.34 below normal; the greatest monthly amount was 4.19, at Allendale, and the least, "trace," at Shaws Forks.

South Dakota.—The mean temperature was 23.4°, or about 7.0° below normal; the highest was 86°, at Rosebud on the 24th, and the lowest, 32° below zero, at Webster on the 13th. The average precipitation was 1.83, or 0.89 above normal; the greatest monthly amount was 8.70, at Ipswich, and the least, 0.19, at Cherry Creek.

Tennessee.—The mean temperature was 45.0°, or 2.2° below normal; the highest was 84°, at Chattanooga and Newport on the 29th, and the lowest, 14°, at Bristol on the 11th and 20th. The average precipitation was 6.33, or 1.25 above normal; the greatest monthly amount was 10.48, at McMinnville, and the least, 3.21, at Chattanooga.

Texas.—The mean temperature was 1.4° below normal; the highest was 105°; at Fort Ringgold on the 30th, and the lowest, 12°, at Happy on the 12th. The average precipitation was 0.43 below normal; there was a general deficiency, except over the east coast district, where the excess ranged from 0.42 to about 5.00, with the greatest in the vicinity of Houston. The greatest monthly amount, 8.58, occurred at Houston, while there was no rain at Camp Eagle Pass, Fort Ringgold, Fort Stockton, Menardville, Midland, and Sierra Blanca.

Utah.—The mean temperature was 38.0°; the highest was 88°, at Moab on the 25th, and the lowest, 7° below zero at Heber on the 5th, and at Soldier Summit on the 31st. The average precipitation was 0.99; the greatest monthly amount was 3.46, at Millville, and the least, "trace," at Cisco and Giles.

Virginia.—The mean temperature was 41.6°, which was somewhat below normal; the highest was 77°, at Bonair on the 30th, and the lowest, 1° below zero, at Dale Enterprise on the 13th. The average precipitation was 4.44; in the Tidewater it was 1.47 below normal; in Middle Virginia, slightly above, and in the Great Valley, 2.09 above normal. The greatest monthly amount was 12.73, at Bigstone Gap, and the least, 1.38, at Cape Henry.

Washington.—The mean temperature was 40.1°, or 0.9° below normal; the highest was 77°, at Kennewick on the 18th, and the lowest, 8° below zero, at Colfax on the 4th. The average precipitation was 2.73, or 0.78 below normal; the greatest monthly amount was 9.96, at Cascade Tunnel, and the least, 0.11, at Moxee.

West Virginia.—The mean temperature was 35.7°, or about 5.0° below normal; the highest was 76°, at Beverly on the 28th, and the lowest, 10° below zero, at Bloomery on the 13th. The average precipitation was 4.45, or about 1.25 above normal; the greatest monthly amount was 8.40, at Elkhorn, and the least, 1.76, at Rowlesburg.

Wisconsin.—The mean temperature was 23.6°, or 5.9° below normal; the highest was 66°, at Prairie du Chien on the 30th, and the lowest, 21° below zero, at Hayward on the 13th. The average precipitation was 1.33, or 1.17 below normal; the greatest monthly amount was 3.40, at Spooner, and the least, 0.30, at Stevens Point.

SPECIAL CONTRIBUTIONS.

RECENT PUBLICATIONS ON METEOROLOGY.

By Dr. J. H. McCARTY, Librarian Weather Bureau.

In response to the requests from several correspondents, the Chief of the Weather Bureau has directed that there be published regularly in this REVIEW a list of recent publications bearing on meteorology and such other subjects as come within the field of study of the officials of the Weather Bureau. In this list of authors and titles the works that have been received by the Library of the Weather Bureau will take precedence, but other works whose titles are known will also be mentioned, although they have not yet been received, in order that the correspondents of the Weather Bureau may thus receive early notice of the publication of works in which they are interested. It is to be understood, however, that those who wish to consult the works on meteorology received by the Weather Bureau must do so in its own Library, where every convenience for study is afforded, as, in fact, is also the case in all the other scientific libraries in Washington.

Belgium.—Observatoire de Belgique. *Annuaire*, 1896. 553 pp. 32mo. Bruxelles. 1896.

Blue Hill Meteorological Observatory.—*Observations made in the year* 1894. *Under the direction of A. Lawrence Rotch. With an appendix containing anemometer comparisons.* (Extr.) Annals Harvard College Observatory. Cambridge. 1895. Vol. XL. 93 pp. 3 pl.

Blue Hill Meteorological Observatory.—S. P. Ferguson. *Anemometer comparisons at the Blue Hill Meteorological Observatory.* (Annals Astr. Obs'y, Harvard College. Vol. XL. Part IV. Pages 265–299. 3 pl. 4to. Cambridge. 1896.

Canada.—The Canadian Institute. *Transactions.* Vol. IV, No. 8. Pt. 2. 368 pp. 8vo. Toronto. 1895.

Canada.—David Boyle. *Archæological Report*, 1894–5. 8vo. Toronto. 1896.

China.—Zi-ka-wei. Observatoire Magnetique et Meteorologique. *Bulletin mensuel. Annee* 1894. *Troisieme trimestre.* 4to. Pages 109–162. Quatrieme trimestre. 4to. Pages 163–230. Chang-Hai. 1895.

China.—Hong Kong Observatory. *The China Coast.* Met. Register. Fol. Hong Kong. 1895.

France.—Commission Internationale des poids et mesures. *Proces verbaux.* 182 pp. 8vo. Paris. 1894.

Hamburg.—Deutsche Seewarte. Deutsches Meteorologisches Jarbuch für 1893. *Ergebnisse der Meteorologischen Beobachtungen an* 10 *stationen II Ordnug und an* 45 *Signalstellen sowie stundliche Aufzeichnungenen* 2 *Normal-Beobachtungsstationen.* Jahrgang XVI. Fol. Hamburg. 1894. Jahrgang XVII. Fol. Hamburg. 1895.

Hamburg.—*Staats Medicinish Statistik*, 1893. 70 pp. 8 Taf. 1894. 98 pp. 11 Taf. Hamburg. 1895.

Hamberg, H. E.—*Öfversikt af Sveriges Klimat.* 12mo. Upsala. 1895. 82 pp.

Habana.—Real Colegio de Belen. B. Viñes, S. J. *Investigaciones en los huracanos de los Antilles.* 79 pp. Habana. 1895.

Hettner, Alfred.—Geographische Zeitschrift. Erster Jahrgang. 712 pp. 8vo. Leipzig. 1895.

Indian Meteorological Memoirs.—Vol. VII. *Meteorological observations recorded at the Trevandrum Observatory during the years* 1853 *to* 1864, *under the superintendence of the late J. Allen Braun.* Edited by J. Eliot, Meteorological Reporter. Part III. Vapor Tension. Fol. Simla. 1895.

Lick Observatory.—*Contributions from Lick Observatory No.* 5. *Meteors and sunsets observed by the astronomers of Lick Observatory in* 1893, 1894, *and* 1895. 8vo. Sacramento. 1895. 86 pp. 17 pl.

London.—Meteorological Office. *Daily Weather Reports, 1st January to 30th June*, 1895. 4to. London. 1895.

London.—Meteorological office. *Hourly means of the readings obtained from the self-recording instruments at the five observatories under the Meteorological Council*, 1891. Official No. 113. 4to. London. 1895. 140 (50) pp. 9 pl.

London.—Meteorological office. *Meteorological observations at stations of the second order for the year* 1891. (Appendix giving results for certain stations for the 15 years, 1876–1890.) Official No. 117. 4to. London. 1895. 195 pp. 1 map.

London.—British Association advancement of science, 1895. *Report of the sixty-fifth meeting at Ipswich, September*, 1895. 884 pp. With list of officers, members. Pages 1–118. 8vo. London. 1895.

London.—Royal Meteorological Society. *The meteorological record.* Monthly results of observations made at the stations of the society, with remarks on the weather for the quarter ending September 30, 1895. London. 1895.

Means, James.—Aeronautical Annual, 1895. 158 pp. 16 pls. Boston. 1896.

Michigan.—State Board of Health. *Twenty-first annual report.* 444 pp. 8vo. Lansing. 1895.

Michigan.—Board of Water Commissioners. Report, 1894. 150 pp.; 1895, 195 pp. 8vo. Detroit. 1895.

Mississippi River Commission.—Hydrographs. From above Cairo to Fort Jackson. 3 charts. St. Louis. 1895.

Missouri State Board of Agriculture.—*Twenty-seventh annual report*, 1894. 8vo. Jefferson City. 1895.

Mexico.—*Boletin de meteorologia hygiene y estadistica medica de Tampico Estado de Tamaulipas.* Febrero, 1896. 10 pp.

New South Wales.—H. C. Russell. *Icebergs in the Southern Ocean.* (Paper read before the Royal Society of New South Wales). 31 pp. 1 pl., No. XII. 8vo. Sydney. 1895.

New South Wales.—H. C. Russell. *Map showing the average monthly rainfall in New South Wales.* 3 pp. 1 pl. 8vo. Sydney. 1895.

New South Wales.—H. C. Russell. *The meteor of June* 27, 1894. 3 pp. 8vo. Sydney. 1895.

New South Wales.—H. C. Russell. *Results of rain, river, and evaporation observations made in New South Wales in* 1894. 193 pp. 4 maps. 8vo. Sydney. 1895.

Norway.—Norwegischen Meteorologische Instutut, Jahrbuch, 1893. 109 pp. 4to. Christiania. 1895.

Prussia.—K. Preuss. Met. Institut. Bericht des International Meteorologischen Comites und der Internationalen Commission für Wolken forschung. Versammlung zu Upsala, 1894. 8vo. Berlin. 1895. 45 pp.

Saxony.—K. Sachs. Met. Institut. *Wetterbericht des Konigl. Sachsischen Meteorologischen Instituts in Chemnitz.* 267 pp. 8 vo. Chemnitz. 1894.

Saxony.—K. Sachs. Met. Institut. *Das Klima des Konigreiches Sachsen.* Heft III. 4to. Chemnitz. 1895. 65 pp.

South Australia.—Adelaide Observatory. *Meteorological observations made at the Adelaide Observatory and other places in South Australia and the northern territory during the year* 1883, 277 pp.; in 1888, in 3 sections, 136 pp.; 1893, 4 sections, 170 pp. Adelaide. 1896.

Switzerland.—Annalen der Central-Anstalt, 1893. *Der Schweizerischen met. beobachtungen.* Zurich. 1895.

United States Hydrographic Office.—*Sailing directions on Lake Michigan, Green Bay, and Straits of Mackinaw.* No. 108. Part II. 139 pp. 8vo. *Lake Huron and Detroit River.* Part III. 109 pp. 8vo.

United States Hydrographic Office.—*Sailing directions for the Gulf Coast of the United States, Caribbean Sea and Gulf of Mexico.* Supplement No. 2. 71 pp. 8vo. 1891.

Wisconsin University.—*Annual Report of the Agricultural Experiment Station.* Vol. XII. 349 pp. 8vo. Madison. 1895.

THE TORNADO OF MAY 27 AT ST. LOUIS, MO.

By H. C. FRANKENFIELD, Local Forecast Official. (Seventy-fifth meridian time has been used throughout this report.)

The tornado which passed through St. Louis late in the afternoon of May 27 was the culmination of a protracted period of abnormally high temperatures, intensified during the latter portion of the time by unusually high humidity. From April 9 to May 27, both inclusive, a period of forty-nine consecutive days, the mean temperature at St. Louis varied from 2° to 21° above the normal. The mean temperature for the month of April was 8° above the normal, and 4° higher than any previous record in the history of the Weather Bureau station in St. Louis. The mean temperature for the month of May was 7° above the normal, and 1.5° higher than any previous record.

The relative humidity was almost exactly normal during April, while during May it was 74 per cent, or 8 per cent more than the normal amount. From May 14 to May 27 it was continuously high at 8 a. m., the average for the period of fourteen days being 88 per cent, or 14 per cent more than the normal amount for that time of the day.

Again, with the exception of three days, the barometric pressure throughout the West for the seven weeks previous to May 27 had been below the normal, with relatively higher pressure in the East and Southeast. Before one depression would disappear in the West another would be seen waiting to take its place. This constant succession of low areas caused the winds to blow persistently from a southerly direction, carrying with them heat and moisture. During April southerly winds prevailed at St. Louis during 69 per cent of the time, and during May during 78 per cent of the time. The bricks and stones in the buildings and streets thus became an enormous storehouse of heat, free radiation at night being prevented by smoke and dust.

At 8 a. m., May 27, the weather map showed the pressure to be low throughout the West, except in the extreme northwest, with the center of depression covering Kansas and Nebraska, the inner isobar being drawn for 29.70 inches. The State of Missouri was, therefore, in the southeast quadrant of the low area. Clear weather, with southerly winds, prevailed through Kansas, Oklahoma, Missouri, and Arkansas, with temperatures ranging from 66° to 78°. The relative humidities were abnormally high, particularly so in Missouri, that at St. Louis being 94 per cent. From Kansas and Nebraska eastward the isotherms of 60° and 70° crossed the isobars at right angles. The position of the State of Missouri in the southeast quadrant of the storm area, combined with the isothermal conditions above mentioned, the high humidity, and the high temperatures, indicated the occurrence of severe local storms within a short time. At St. Louis at 8 a. m. the pressure was 29.92 inches, the temperature 70°, and the relative humidity 94 per cent. The winds were blowing from the south, with a velocity of 8 miles per hour, and the sky was about one-third covered with cumulo-stratus clouds, with some traces of cirro-stratus, both moving from the southwest. By noon the barometer had fallen .05 inch, to 29.87, and the temperature had risen to 80°. The winds remained mostly in the south, with a slightly increased velocity, reaching 12 miles at noon. The abnormally high humidity continued, and the sky became hidden by a uniform covering of alto-stratus clouds, through which the sun shone lazily, not enough to glare uncomfortably, but still sufficiently to cast a well-defined shadow.

From noon until 1.45 p. m. the barometer remained stationary and the winds shifted slightly to the southwest, averaging from 7 to 10 miles per hour. The temperature rose to 86°, and the veil of alto-stratus clouds still hung over the city. By 2 p. m. the barometer had commenced to fall rapidly, and the winds had changed to southeast, with slowly increasing velocity. The fall in pressure was intermittent, but at the same time persistent, and by 6 p. m. the reading was 29.59 inches, a fall of 0.28 inch since noon, and a fall of 0.09 inch during the twenty minutes immediately preceding. The winds continued from the southeast with gradually increasing velocity until 5.45 p. m., when they changed to east-northeast with a sudden increase in velocity, reaching 45 miles per hour from 5.55 to 6 p. m.

At 3.45 p. m. the temperature commenced to fall, and by 6 p. m. had fallen 9°, to 77°. The clouds slowly increased in density, and at 3.35 p. m. the sun was obscured. The character of the clouds changed about this time to cumulus, but of a very peculiar formation. The whole sky was compactly covered with small cumuli of almost perfect hemispherical shape, but with the rounded portions underneath.* Their color was a dark gray with deep shadows on the sides farthest from the sun. By 4.30 p. m. these clouds had settled into a uniform covering of stratus, which commenced to assume a light green color in the extreme northwest, spreading more toward the west and north. Thunder and lightning commenced at 5.06 p. m., and rain in the form of large, scattered drops, at 5.43 p. m. At 6.04 p. m. there was a marked increase in the violence of the storm, although from 6 to 6.10 p. m. the winds changed again to southeast, with decreased velocity of from 33 to 36 miles per hour. During this period the barometer rose 0.08 inch, to 29.67, and fell almost instantly 0.10 inch, to 29.57. It again rose 0.10 inch in less than five minutes, to 29.67. During the next fifteen minutes (to 6.30 p. m.), it fell 0.31 inch, to 29.36, and then instantly rose 0.40 inch, to 29.76. It then continued in a series of sharp oscillations of from 0.05 to 0.10 inch, until 10 p. m., when the oscillations became smaller, ceasing finally at midnight, when a steady rise commenced. †

The winds at 6.10 p. m. once more changed suddenly, this time 180° to the northwest, and with greatly increased velocity, reaching 80 miles per hour from 6.15 to 6.20 p. m., with an extreme velocity of 120 miles per hour at 6.18 p. m. At

* Mammato-cumulus. See in this connection the REVIEW of March, 1894. Mr. J. C. Widmeyer, observer, Weather Bureau, Oklahoma, Okla., has also noticed the same cloud formation on days when tornadoes formed in the Territory. No special significance seems to attach to the phenomena, except that of a gradual descent or sinking of the air. X

† Note added by Mr. Frankenfield, June 23, 1896. "I have just learned of the height of the barometer, within a reasonable degree of accuracy, in or very near the center of the track of the tornado at the time it moved through Lafayette Park. It was in this park that the storm was at its height. An aneroid barometer, with a metrical scale, was brought to me to be reset, and I was informed that it was the property of the widow of the late Richard Klemm, ex-Park Commissioner of this city. The family live on Missouri Avenue, immediately fronting the park, and a son of Mr. Klemm read the barometer as the storm struck their place. He called the attention of his mother to the remarkably low reading, 680 mm., or 26.78 inches. Allowing for difference in elevation and reduction to sea level, this would indicate a reduced reading of 27.30 inches, or 2.05 inches lower than observed at this office."—ED.

6.20 p. m. the direction once more changed, this time to the northeast, with a decided decrease in velocity, falling to 7 miles per hour at 6.55 p. m. After that time it again gradually increased to 36 miles per hour, at 7.23 p. m., when the second heavy fall of rain commenced. At 7.32 p. m. there was another sudden decrease to between 12 and 15 miles per hour, after which time it remained comparatively steady, with a generally easterly direction.

The thermograph was blown over in the shelter a few minutes after 6 p. m., reading 71° at the time. The temperature variations, however, were not marked, a minimum of only 65° being reached at 8 p. m. Heavy rain commenced at 6.04 p. m., continuing until 7.05 p. m., when a still heavier fall commenced, ending finally at 10.05 p. m. The heaviest falls of rain were as follows: Five minutes (from 7.25 to 7.30 p. m.), 0.55 inch; ten minutes (from 7.23 to 7.33 p. m.), 0.66 inch; one hour (from 6.04 to 7.04 p. m.), 1.33 inches.

The general direction of the storm through the city was from west to east [about seven blocks south of the Weather Bureau station], turning slightly to the north of east as it reached the river, and continuing in that direction through East St. Louis into Illinois. The electrical display during the storm was of exceeding brilliancy. It was first observed in the form of sheet lightning in the northwest at 5 p. m. This continued with short intermissions until 5.45 p. m., when it became almost continuous, and extended more into the west and north. Little or none was observed directly in the south. At 6 p. m. the whole west and northwest sky was in a continuous blaze of light, and the reflection could be seen beyond the clouds extending far into the southern sky. Intensely vivid flashes of forked lightning were frequent, being outlined in green, blue, purple, and bright yellow colors against the dull yellow background of the never-ceasing sheet lightning. A peculiar electrical phenomenon was observed at 6.15 p. m. A sharp line of bright, yellow lightning was seen almost directly in the west at an altitude of about 25°, extending thence 5° toward the zenith, which, instead of disappearing as suddenly as it had appeared, moved about 5° toward the south, remaining visible about one second, and maintaining its perpendicular position.

The display of lightning lasted as long as did the heavy rain, but occasional flashes continued to be seen after 10 p. m. The thunder ceased at 9.50 p. m. The green cloud remained in the northwest almost to the end of the storm, but while the violence was greatest large black masses of fracto-cumuli with exceedingly ragged edges, moved from the south, west, and north, crossing each other with great rapidity in the west at an altitude varying from 30° to 70°. No evidences of the tornado funnel cloud were observed, although they were carefully looked for, and thorough inquiry and investigation have failed to produce any.

Grand and magnificent as was the spectacle as witnessed from the Weather Bureau station, it fades into comparative insignificance when contrasted with the wonderful and terrible transformation which was in progress at the same time nearly a mile farther south. Here, in the darkness, was waged the fiercest conflict; scenes appalling in their terror and awfulness were witnessed—a sickening tragedy was enacted, and all the tremendous forces of nature were apparently convulsed in a horrible, mighty, and invincible determination to overthrow and to destroy.

The storm entered St. Louis from the west between the Missouri Pacific Railroad tracks on the north and one or two blocks south of the poorhouse on the south, a width of about 1¼ miles. The time, as nearly as can be estimated from the various reports received, and from comparison with the data at the Weather Bureau Office, was 6.10 p. m.

The path through the city was almost exactly in a due easterly direction, reaching the Mississippi River, about 6 miles distant, at 6.20 p. m., showing a progressive velocity of about 36 miles per hour.

The width of the storm track remained generally the same as it moved eastward until 2d Carondelet avenue was reached, when it narrowed to somewhat less than one mile, and thereafter continued within this limit. When the high ground at Grand avenue and Compton Hill Reservoir was reached the storm apparently lifted so that the district north to Caroline street, and east to California avenue was touched but lightly, except along Lafayette avenue, which was damaged considerably as far west as Compton avenue. This Compton Hill district is about 25 feet higher than the surrounding neighborhood.

The district immediately to the south of the reservoir did not escape, and Russell avenue between the reservoir and California avenue was particularly unfortunate.

There was no evidence of the inward spiral rotary motion of the winds west of California avenue, but in the district east of this avenue, south to Geyer avenue and north to Lafayette avenue, the position of the debris indicated the presence of the whirling motion, and from this section eastward the greatest destruction was wrought,* the width of the path traversed by the whirl remaining the same.

The storm attained its maximum severity in Lafayette Park and the district immediately surrounding. The park is about two blocks square, and was thickly covered with trees, mostly of mature growth. Every tree, except perhaps a dozen small and very pliable ones, was either twisted or broken off, and in some cases uprooted. The bark was also stripped off of many. The debris lay in every direction, showing that the center of the whirl must have passed directly through the park. At the City Hospital, a short distance east of the park, the lower edge of the whirl evidently passed through the northwest half of the grounds where there was nothing but a complete and confused mass of wreckage to be found; while in the southeast half the inner walls were blown out toward the north, and almost all of the outer walls remained standing.

Evidences of gyratory motion become less marked after leaving the hospital, but they are still more or less apparent as the storm moved eastward across the river into East St. Louis, the debris on the north side lying generally toward the south, and that on the south side toward the north.

During the progress of the storm across the city, many who were directly within its limits heard a rumbling noise similar to that made by a long train of cars while passing through a tunnel. No unusual noises, however, were heard at the Weather Bureau station. A very noticeable characteristic of this storm was the comparatively uniform height of its lower edge above the ground, the distance being about 30 feet, rarely more or less. In a great majority of the houses which were struck the damage was above the first floor, except in the cases of collapse in the center of the track, and of crushing of lower floors by the weight of debris falling from above. Hundreds of walls were blown out above the first floors, while the lower walls remained practically intact. In Lafayette Park nearly all of the trees were broken or twisted off at an elevation of about 30 feet. Numerous other evidences of this uniform height were also observed.

The evidence of unusual heat which often accompanies tornadoes was observed at only one place, Lafayette Park. Here many of the branches and twigs bore signs of having been seared, as if by a hot iron. [Also noted in the Sherman, Tex., tornado.—ED.]

*This is in accordance with theory. The progressive motion of the general storm was a little south of east with a considerable velocity. This motion combined with the gyratory velocity of the winds on the southeastern side of the whirl would produce a much greater resultant velocity than on the left-hand side where the general drift of the storm and the gyratory motions were more or less in contrary directions.—ED.

Much damage appears to have been caused by great differences in the atmospheric pressure within very limited areas, creating, as it were, numberless small secondary whirls. For instance, single stones and bricks were taken out of walls. A wagon loaded with lumber and having two horses attached was standing near the river; the wagon was not even overturned, while the horses were carried away. In numerous instances the walls of a house would be blown outward, while its neighbor escaped practically untouched. Of course, in cases of this latter description, due allowances must be made for differences in construction, but in many instances this factor would be of minor importance. Another point noticed was that in the storm track, whenever an opportunity was afforded to more or less equalize the pressure between the insides and outsides of structures, the damage was proportionately less than where there was no such opportunity. This was remarked in some houses where the windows had been left open, and also in others roofed with slate or shingles when compared with those roofed with tin. A patch of slate or shingles would be torn away, allowing the air to escape from within, and the remainder of the roof would escape injury. Not so, however, with tin roofs; being of one piece and more securely fastened, they were entirely taken away.

It was noted also by comparison with the data at other points that the storm increased in intensity as it entered St. Louis, and again decreased after it left East St. Louis. The immense increase of surplus heat which had been stored in the walls and streets of the city during the seven weeks previous, combined with that liberated by the heavy rainfall, may have contributed to this. As the storm left the city for the open country, its supply of fuel was greatly decreased, resulting in a corresponding loss of energy.

Regarding the actual intensity of the storm, there has been much difference of opinion, particularly among architects, civil engineers, and others whose opinions are of value. Many insist that no structure in the city could have withstood the full force of the tornado, and point to the disaster at Lafayette Park and the St. Louis bridge as confirmations of their theory. The evidence afforded by the park is probably satisfactory proof, but not so that afforded by the St. Louis bridge. Here some of the heavy masonry on the south side of the East St. Louis approach was torn away, but it is extremely difficult to believe that it was done by direct application of air pressure. Competent and experienced engineers have assured me that the masonry on this bridge, supported as it was above and below, could withstand a pressure of at least 2,000 pounds to the square foot. The pressure per square foot on an absolute vacuum at sea level is only about 2,100 pounds, and it is not reasonable to suppose that even in the very center of the tornado whirl did anything approaching a perfect vacuum exist. Consequently pressure alone, or even pressure combined with a twisting motion, could not have produced the damage to the bridge. Probably the correct solution of the matter is that the supports were first torn out and then the unsupported columns of masonry were not sufficiently strong to withstand the pressure. Consequently they were blown down. If the supports had remained intact, there would have been no damage done to the columns.

In other portions of the city the greater part of the damage was unquestionably due to comparatively weak construction. In the vicinity of Lafayette Park, where most of the houses were well built, instances of total destruction were infrequent as compared with those in the districts farther east and in East St. Louis.

Again, instances of heavy bodies, such as roofs, etc., being carried for a considerable distance (a frequent occurrence in tornadoes), were quite rare in this storm. In some instances roofs were pushed over to one side, and in others they simply settled down on the debris or lower walls after the upper ones had fallen or been blown outward. I have heard of none that were carried away. Neither did I hear of any trees being moved more than a few feet.

Probably the most remarkable evidence of the force of the storm was the following:

On the long East St. Louis approach to the St. Louis bridge a white pine plank, 2 by 8 inches, was driven into the south side of a steel girder with such velocity that it punched a hole in the web and remained sticking in the girder.

The tornadoes in St. Louis and East St. Louis were the local manifestations of a series of destructive storms which moved from the eastern portion of Missouri through Illinois during the afternoon and evening of May 27.

The first storms reported were in the southeast portion of Randolph County and the extreme northern portion of Boone County (see Chart VIII), about 125 miles west-northwest from St. Louis.

After leaving Randolph County two tracks appear, one northeastward into Monroe County where it was lost, and the other eastward through Audrain County into the western portion of Pike County; then southeastward through Montgomery and Warren counties to the Missouri River, and thence generally eastward, the next reappearance being in St. Louis County and the extreme eastern portion of St. Charles County. Passing through St. Louis and across the river to East St. Louis, the track appears to have been easterly through St. Clair into Washington and Jefferson counties, with a milder spur northeastward into Fayette county.

Following are brief accounts of the storms in the majority of the places in which they were most severe, the data having been obtained through the courtesy of the postmasters and others interested:

Higbee, Randolph County, Mo.—The storm passed south of the town, about 3 p. m., moving toward the northeast. A funnel cloud was seen and heavy rain fell, with some scattered hailstones of large size. The storm was accompanied by heavy thunder, some lightning, and a roaring noise. A whirling motion was observed, and debris lay in every direction. The width of the path of greatest destruction was about 200 feet. A peculiar brightness was seen in the cloud and two clouds were seen to come together in the west.

Clark, Randolph County, Mo.—The storm passed to the northwest of the town about 3 p. m., moving northeast by east. A funnel cloud was seen and heavy rain fell, with considerable hail, some of the stones being an inch in diameter. The storm was accompanied by continued rolling thunder, but with little lightning, and a roaring noise was heard. A whirling motion from left to right was observed. The width of the path of greatest destruction was from 50 to 100 yards and its length about 6 miles. A slight glow was seen in the cloud, and two clouds were seen to come together in the west.

Renick, Randolph County, Mo.—The storm moved in a northeasterly direction about 1¼ miles south of the town at about 4 p. m. A funnel cloud was seen and heavy rain fell, with some large hailstones also. There was considerable lightning, but very little thunder, and a roaring noise was heard. There was also a whirling motion from left to right. The length of the path of greatest destruction was 4 or 5 miles. The clouds had a greenish appearance, and two were seen to come together in the west.

Sturgeon, Boone County, Mo.—The storm passed about 4½ miles north of the town about 4 p. m., moving from the northwest toward the southeast. A funnel cloud was seen, and heavy rain, with some light hail, fell after the storm. There was heavy thunder, with vivid lightning, and a roaring noise was heard. A whirling motion from left to right was observed, and the debris fell some to the east and some to the west. The width of the path of greatest destruction was about 200 feet, and its length about 3 miles. A peculiar glow of brightness was seen about the clouds, and two were seen to come together in the west.

Mexico, Audrain County, Mo.—The storm moved toward the northeast, passing about 5 miles north of the town about 6 p. m. A funnel cloud was seen, and there was heavy rain, most abundant after the storm. There was also hail, with stones of irregular shape, some of them weighing 7 or 8 ounces. A roaring noise was heard, and a whirling motion from left to right was observed. The debris all fell toward the northeast. The width of the path of greatest destruction was one-fourth of a mile.

Vandalia, Audrain County, Mo.—The storm passed on the west side of the town about 3.35 p. m., moving from the northwest toward the southeast. No funnel cloud was seen, and there was very heavy rain,

most abundant after the storm. There was very little hail and not much thunder. A roaring noise was heard, and there was an apparent whirling motion from left to right. The width of the path of greatest destruction was about 100 yards, and its length 1 mile. Two clouds were observed to come together in the west.

Curryville, Pike County, Mo.—The storm moved over the town from the northwest toward the southeast at about 3.50 p. m. No funnel cloud was seen, but, as it was very dark during the high wind, it might have escaped observation. Six inches of rain fell. It was very heavy during the high wind, and for thirty minutes after. There was little or no hail. There were but few peals of thunder, but they were terrific, and were so low that they seemed to be on the ground. A roaring noise was also heard. On the north side of the track the debris fell toward the northeast (?), and on the south side toward the southwest (?). In the center it lay in every direction. The width of the path of greatest destruction was about 1¼ mile, and its length about 8 miles, very heavy for 4 miles and lighter over the remaining 4. The clouds were very dark and low and appeared to be going in every direction. Two came together in the west.

High Hill, Montgomery County, Mo.—The storm passed north of the town about 5 p. m., moving toward the southeast. It was impossible, on account of the darkness, to observe whether there was a funnel cloud or not. Heavy rain fell, but no hail. The thunder was terrific, and vivid lightning was seen in the west. A roaring noise was also heard. The debris fell in every direction. The length of the path of greatest destruction was 6 or 7 miles. The clouds were black and green, and came from all directions.

Washington, Franklin County, Mo.—The storm passed near and through the southeast portion of the town about 5.40 p. m., moving from the southwest toward the northeast. A funnel cloud was seen. The rainfall was light before the storm and heavy after. Some hail the size of marbles fell. There was considerable lightning and thunder, and a roar was heard. A whirling motion from left to right was observed. The debris on the north side of the track fell toward the southeast; that on the south side toward the northeast, and that in the center due east. The width of the path of greatest destruction was three-eighths of a mile, and its length at least 15 miles. The clouds had a blue, sandy appearance, and they parted west of the town, one going north and the other south. The latter caused the most damage.

Chamois, Osage County, Mo.—The storm passed southeast of the town about 6.15 p. m., moving toward the northeast. A funnel cloud was seen, and there was heavy rain and hail, the hailstones being as large as hens' eggs. There was some thunder but not very heavy, and a roaring noise was heard. The debris fell toward the northeast on all sides of the track. The width of the path of greatest destruction was 150 yards and its length 5 miles. Two clouds were seen to come together in the west.

Clayton St. Louis County, Mo.—The storm passed over the town at 6 p. m., moving toward the southeast. No funnel cloud was seen. Heavy rain fell during the storm but no hail. There was no whirling motion observed, and debris in the center of the storm track lay toward the southeast. The width of the path of greatest destruction was 1 mile and its length 8 miles. A peculiar brightness was seen in the clouds, and two were observed coming together in the northwest about 5 miles distant.

Mascoutah, St. Clair County, Ill.—Two storms passed over the town at 6.45 p. m., one moving from the southeast, and the other from the northwest. No funnel cloud was seen, and heavy rain fell, being most abundant after the storm. Some hail but not heavy, also fell 6 hours after. There was a little lightning, and a roaring noise was heard before the storm. No whirling motion was observed, but debris lay in all directions. The width of the path of greatest destruction was nearly 1 mile, and its length 1¼ miles. Before the storm a glow was seen in the clouds, and two came together just west of the city.

Richview, Washington County, Ill.—The storm passed north of the town at 8 p. m., moving a little south of east. No funnel cloud was seen, and rain fell most abundantly after the storm. Thunder and lightning were terrific and almost continuous. A roaring noise was heard, but no whirling motion was observed. Debris lay in every direction but mostly toward the east. The length of the path of greatest destruction was about 5 miles. The cloud was first green above and yellow below, and was quickly followed by a heavy black clond from the southwest.

Mount Vernon, Jefferson Co., Ill.—The storm passed about 5 miles north of the town at 9 p. m., moving east-southeast. A funnel cloud was seen. The rain was very heavy, 2.85 inches, and heaviest during the storm. No hail was seen. The thunder was very heavy, and the electrical display very brilliant. A roaring noise was heard, and a whirling motion observed, the debris lying in every direction. The width of the path of greatest destruction was from one-fourth to 1 mile. There was no bright cloud, and no meeting of two clouds in the west.

Recapitulation.

Place.	Lives lost.	Value of property destroyed.
St. Louis, Mo	137	$10,239,000
East St. Louis, Ill	118	2,000,000
St. Louis County	.....	100,000
Curryville, Mo	1	90,000
Audrain County, Mo	6	.....
High Hill, Mo	1	.....
Washington, Mo	1	15,000
Chamois, Mo	2	200
Clayton, Mo	1	5,000
New Baden, Ill	13	.....
Birkner, Ill	8	.....
New Minden, Ill	11	200,000
Harmony Station, Ill	2	.....
Mascoutah, Ill	1	125,000
Germantown, Ill	1	.....
Richview, Ill	1	10,000
Jefferson County, Ill	2	.....
Clark, Mo	.....	3,500
Renick, Mo	.....	22,000
Sturgeon, Mo	.....	200
Mexico, Mo	.....	50,000
Vandalia, Mo	.....	45,000
Total	306	12,904,900

REMARKS BY THE ACTING EDITOR.

The meteorological conditions attending the tornadoes of May 27, 1896, were charted and described in Storm Bulletin No. 4, 1896. Subsequent reports show that the area of what may be termed thunderstorm conditions was of very considerable extent, embracing the whole of the States of Iowa and Missouri, the greater portion of Illinois, and extending eastward and southeastward into Kentucky, Tennessee, and West Virginia. The path of greatest destruction, or the region within which the tornado formation occurred, is shown on Chart VIII. It must not be conceived that a single tornado or even a number of tornadoes, passed over the area inclosed between the heavy lines on Chart VIII, but rather that tornadic action was developed successively at different points in the track of the general storm. The latter apparently belonged to a class of summer thunderstorms which move broadside in a southeasterly direction through the States of the central Mississippi Valley, generally dying out at nightfall.

At a number of places within the path of greatest violence, severe thunderstorms only were experienced, but even these frequently cause destruction of life and property, especially in cases of unfinished structures and buildings of weak construction.

The St. Louis tornado, when compared with tornadoes that have occurred in other sections of the country, does not appear to have been extraordinarily violent. The loss of life was relatively small, considering the very great opportunity that was presented. The Louisville tornado, with a path of only 300 yards in width, caused the destruction of 76 lives and a property loss of $2,500,000.

It is only within the last few years that an opportunity of observing the effect of a tornado on one of the larger cities has been offered, and only quite recently that anything approaching a complete record of the various meteorological elements during the passage of a tornado, has been secured. The records made by the automatic instruments at the St. Louis station are given on Chart IX, to which has been added a copy of the barograph trace at Little Rock, Ark., during the passage of a tornado over that city in October, 1894. There have also been added barograph curves at Rochester, Albany, New York, and Philadelphia during the passage of what might be called thunderstorms and incipient tornado conditions during September 17, 1895. The New York observer remarks in this connection:

Evidence of tornadic action was observed to the east of station between 9.10 and 9.20 a. m. There was a bank of dark clouds in great confusion moving, apparently, from the south; distinct formation could not be fully observed on account of the dense fog that prevailed at the time.

The agreement between the two pressure curves, Little Rock and St. Louis, is very striking, and tends to confirm the theory that there is a partial vacuum or core of greatly diminished pressure at the center of the tornado vortex, caused by the centrifugal force of the gyrations. The marked oscillations of pressure after the passage of the tornado are also important as evidence of the greatly disturbed equilibrium of the atmosphere and the gradual return to normal conditions.

The amount of pressure fall in the vortex is still unknown, and, from the nature of the case, will probably always remain so. The Weather Bureau office in St. Louis, where the fall of pressure at the moment of the tornado's passage was one-third of an inch, was probably three-quarters of a mile from the center of low pressure. The sudden removal of one-third of an inch of pressure, as measured by the mercurial barometer, corresponds roughly to a pressure of 22 pounds per square foot of surface. This must then be an approximation to the force exerted by the expansion of air of ordidary density confined within buildings in the neighborhood of the Weather Bureau office. The explosive force in the tornado's path was of course vastly greater than on either side, but we have no means of measuring its intensity, unless we accept the reading of the aneroid referred to in Mr. Frankenfield's note of June 23. Further details as to the condition of the aneroid before and after the tornado will be obtained if possible, and published in a subsequent REVIEW.

It is regretted that a record of the direction of the wind at less intervals than five minutes can not be obtained. In reading the record of direction on Chart IX it should be remembered that the directions given are those that prevailed for an instant of time only at 5-minute intervals. Southeasterly winds prevailed from 2 to 5.40 p. m., there being not the slightest variation from that direction. These winds again reappeared at the surface after the tornado had passed, viz, from 6.55 to 7.15 p. m., and again from 9.25 to 10.05 p. m. Thereafter, until 1.30 a. m. of the 28th, the winds were southerly or southwesterly. From 1.30 a. m. until noon of the 28th, the winds were generally northwesterly, occasionally backing to westerly. It may be of interest to note that the southeasterly winds and the oscillations of the barometer ceased at the same time. The velocity record is quite similar to that of a thunderstorm or squall wind. In the Louisville tornado the maximum velocity was but 36 miles per hour, although the tornado path was less than 600 yards from the Weather Bureau office. The wind was also quite moderate on either side of the Sherman tornado. The fact that the greatest damage was done to upper stories, and that there seemed to be a limit below which the force of the tornado was not felt, was also noticed in the Louisville tornado.

The ordinary funnel cloud seems not to have been fully developed in either the St. Louis or Louisville tornado. In the Sherman, Tex., tornado of May 15, 1896, the tornado cloud was seen and accurately described by several persons. The following from an interview with Prof. A. Q. Nash, of the Sherman Institute (Globe Democrat, St. Louis, May 22 1896), is so clear and explicit as to the updraft and the whirling motion that it is here reproduced:

When the cloud passed in front of me it seemed to be going at the speed of a galloping horse. The speed was not so great but that almost any one running to the east or to the west could have got out of the way. The cloud swelled out above the ground, but the top of it was higher than the sides. It seemed to be churning up all that it touched and throwing out the fragments at the top. The shape and action was much like a geyser. At the same time, as it moved along, the mass had a rotary motion. It whirled round and round in a direction from right over to left, just the reverse of the movements of the hands of a watch.

Only the outlines of the mass could be distinguished. It was impossible to see into it. Houses and other things went up as the cloud reached them, disappearing in the revolving interior. At the top and around the edges I could see things whirling and then falling as they got beyond the edges. The revolving velocity was so great it set the adjacent air in motion, and the lighter things, such as leaves and twigs, and bits of pine and particles of mud, circled far outside of the cloud and fell at considerable distances from the path of the cyclone. In the short time I stood there watching the cloud pass I was covered with mud and drenched with muddy water. As the cloud passed the rotary motion could be seen very plainly in the rear.

The path of greatest destruction in the St. Louis tornado extended from Randolph County, Mo., to Jefferson County, Ill., a distance of about 200 miles. After leaving St. Louis a score or more of towns and villages was passed over and 39 lives were lost before the fury of the storm abated.

The scene of tornadic activity was transferred on the following day to southern-central und southeastern Pennsylvania. The center of the general storm was over the lower Lakes, but it will be observed that the region of tornadoes maintained the same relative position to the storm center as on the previous day. The first appearance of a tornado on the 28th was at Columbia, Pa., at 1.30 p. m. One person was killed and 20 injured by the wrecking of a large rolling mill. An eye witness of the storm, Mr. T. L. Urban, describes its approach as follows:

* * * Approaching the window and looking to the northwest I beheld a black cloud, like a great monster about to leap into the river, when, like a flash, and to my surprise and horror, it lifted its colossal form from the bosom of the water in a rotary form. Propelled by the cyclone force it neared the shore; then began the most appalling sight it has been my province to witness. * * * Spellbound I gazed at its approach whirling round and round with a roaring noise, water and mud in advance. It struck the shore, when the black cloud seemingly shot upward, and beneath it I beheld the air filled with flying objects; one huge black mass seemed coming directly towards me. * * * In a whirlwind form it came directly towards me, when to my agreeable surprise on reaching the railroad it took a south, thence southeasterly, course and continued on, leaving in its wake desolation and destruction.

After leaving Columbia the tornado appears to have spent its force, although severe winds and thunderstorms were experienced to the northeastward as far as Easton. A second series of tornadoes swept through Montgomery and Bucks counties to the New Jersey line. Four people were killed and the property loss was quite large. A third series appears to have passed through southern New Jersey, but no lives were lost and the damage was confined principally to the destruction of fences, outbuildings, and barns.

NOTE BY THE CHIEF.

Certain interviews with Prof. H. A. Hazen, U. S. Weather Bureau, have recently appeared in the public press, in which the planting of forests on the southwestern edge of cities and the discharge of dynamite bombs have been advocated as a protection against tornadoes.

It should be clearly understood that the Weather Bureau—using that term as expressing the collective thought of its Chief and members of the scientific staff, Professor Hazen alone excepted—does not indorse the theories set forth in the interviews above referred to. The opinions expressed and the methods of executing them are Professor Hazen's, and he alone is responsible for them.

That there may be no misunderstanding in the matter, the following letter has been sent to the managing editors of the various journals that have commented upon the interviews above mentioned:

"I have to inform you that these statements were not authorized by the Weather Bureau, and that the theories advanced are not held by scientific men generally. The interview came from Professor Hazen as a private individual, and not in his capacity as an official of this Bureau.

"From personal observation of the havoc wrought by several tornadoes, I am fully convinced that any attempt to destroy them by the means suggested will be a failure."

June 24, 1896. WILLIS L. MOORE.

NOTES BY THE EDITOR.

TORNADOES OF APRIL AND MAY, 1896.

Prepared by A. J. HENRY, Acting Editor, under the direction of Prof. WILLIS L. MOORE Chief of Bureau.

The tornadoes of May 15, 17, and 25, while not of extraordinary severity, swept through prosperous sections of the country, and caused great loss of life and destruction of property. Following quickly upon these disasters came the news of a violent tornado that cut a path of destruction through the heart of one of our great cities—an event that has made the month of May, 1896, historic. These violent disturbances, coming so quickly one upon another, have served to direct public attention afresh to the subject of tornadoes and their occurrence in certain sections of the country.

The press accounts of destructive storms, upon which the public depends for its information, while generally accurate as to the main facts of the storm, are often misleading as to the details. These accounts suffer, moreover, from the fact that the first news of a disaster is often based upon insufficient information, and almost always transmitted without verification. As a result, it has been found necessary to revise the press dispatches and to make careful inquiry of some one in the neighborhood, generally the postmaster, as to the facts concerning each storm, in order that its destructive effects, if any, may be truthfully recorded. It is desirable also to make a record of the number of violent storms that occur each year. This has been done during the last six years, during which time nearly 800 storms have been observed, an average of 129 per annum. The number of lives lost, on the average, each year is 243. These figures have no special significance, however, since the loss of life is so largely dependent upon the character of country passed over, whether thinly settled or populous.

In view of the fact that several lists of losses of life by tornadoes, in which the total loss is more or less overstated, have appeared in the press, it is deemed advisable to publish the following report, based upon more definite information than was obtainable at the time the press dispatches were prepared.

In a few cases the figures hereinafter given are not final, and in other cases there is some uncertainty as to the correctness of the reports. All such cases are being investigated. The number of deaths by lightning and drowning, the latter as a consequence of the so-called cloud-bursts, are also given.

TORNADOES, APRIL, 1896.

11th.—The winds assumed the violence of a tornado in portions of north Texas on the night of the 11th; one person was killed; property loss, small.

12th.—A tornado occurred in the vicinity of Cale, Ind. T. A dwelling, a church, and a schoolhouse were destroyed; no lives lost.

15th.—A severe thunderstorm, at times approaching the violence of a tornado, passed through Faulk County, S. Dak., in a northeasterly direction in the early morning of April 15; 2 people were killed and 3 injured; property loss about five thousand dollars ($5,000). This storm was first observed at Burkmere, at 3 a. m. At Millard, 8 miles northeast of Burkmere, at 3.50 a. m., and at Cresbard, about 12 miles east-northeast of Millard, at 3 a. m. It is probable that several thunderstorms developed simultaneously in this region.

This storm occurred under rather exceptional conditions, so far as the location of the center of low pressure is concerned, the latter being southeast of Faulk County. A "high" was advancing from the northwest with general snow throughout Montana and North Dakota. The air temperature at the time the storm occurred was probably not above 40° Fahrenheit, and snow was falling not more than 200 miles to the northwestward.

20th.—A tornado occurred in Sandusky County, Ohio, near Fremont; 3 killed and about 20 injured. Northern Ohio and western Pennsylvania were visited by severe thunderstorms on the afternnoon of the 20th, but the tornadic formation was observed only in two places, viz, near Fremont and at Vickery, both in Sandusky County. The loss in this county alone was estimated at one hundred thousand dollars ($100,000). The greatest destruction was in spots, the tornado lifting from the ground and descending again several miles distant. The following is an account of an eye witness of the storm:

> At 2 p. m. I was standing on my porch and viewed the whole thing; saw it come for a mile; it seemed about 10 feet high and 8 feet in diameter; crept along the ground like a mammoth rock; smoke puffed at the top like an engine; when near Hendricks' it seemed to rise up and the smoke came out below and it all began to whirl around, then exploded and crashed into Hendricks' barn and house and smashed them completely; boards and everything blown in all directions; the cyclonic formation then started on its journey eastward, widening out as it went, demolishing houses and barns, etc., in its path; I was but half a mile from the storm and saw it all.

The path of destructive thunderstorms in Northern Ohio was from 15 to 20 miles wide, and extended across the entire State.

24th.—A house was blown down and 3 people were killed during a severe thunderstorm at Salem, Va.

25th.—A destructive tornado struck the eastern edge of Cloud County, Kans., on the 25th instant, passing eastward into Clay County, through a thickly settled and prosperous portion of the two counties; 8 people were killed and 20 injured. The path of the storm was nearly a half mile wide and about 20 miles long. Houses, barns, granaries, and fences were demolished, and the fragments strewn broadcast over the path of the storm. Newspaper reports state that hail fell, in some cases, 7½ inches in circumference, by actual measurement. Fifteen thousand dollars ($15,000) is a conservative estimate of the loss to the buildings alone, 27 dwellings being totally destroyed and many more injured.

26th.—A tornado passed through Barnes County, N. Dak., on the afternoon of the 26th; 1 person was injured; property loss was small.

27th.—Two tornadoes occurred in Hanson and McCook counties, S. Dak., on the evening of the 27th; 2 persons were injured; property loss of both tornadoes about fifteen thousand dollars ($15,000).

28th.—The daily press reports of this date contained accounts of cyclones said to have occurred near Grinnell and Waterloo, Iowa, and Centralia, Mo. Subsequent investigation proved that severe thunderstorms only occurred on this date.

Recapitulation for April.

Number of tornadoes	7
Number of lives lost	17
Number of persons injured	46
Property loss, estimated	$139,000

TORNADOES, MAY, 1896.

Tornadoes occurred on ten days in the month, viz: 11th, 12th, 15th, 17th, 19th, 20th, 24th, 25th, 27th, and 28th. The severe storms of the month, considered from the standpoint of loss of life and property, were those of the 15th in Grayson and Denton counties, Tex.; 17th in Brown and Nemaha counties, Kans.; 24th and 25th in Dallas, Polk, and Jasper counties, Iowa; Oakland, Lapeer, and Macomb counties,

Mich.; 27th at St. Louis and other points in Missouri and Illinois, and on the 28th in eastern Pennsylvania.

The record follows:

11th.—A tornado was observed in Rice County, Kans., but it was not of great violence and passed over only a small portion of the county; no one was killed, and the property loss was quite small. On the same date a tornado was reported in Worthington, Minn. The storm was not severe and no lives were lost. The damage to buildings was about $2,000.

12th.—Tornadoes of little violence occurred at widely separated points on the afternoon of this date. The most northerly storm occurred in the vicinity of Elkhorn, Nebr. Little damage was done. Mr. Carl Johnson, a farmer, was caught in the vortex and carried about 150 yards from the point where the storm first struck him. He escaped serious injury. Later in the day a storm of wind passed over Lincoln, Nebr., injuring 4 persons and damaging property to the extent of $5,000 or $6,000. A tornado occurred 5 miles north of Sterling, Kans., injuring 3 persons and destroying a number of houses. On the same afternoon two tornadoes occurred in northern-central Texas, one in Dallas County, near Lawrence, the other in the northwestern part of Navarro County, near Mestens and Frost; there was no loss of life, and the property loss did not exceed $3,000.

15th.—A very destructive series of tornadoes occurred in Denton and Grayson counties, Tex., on the afternoon of this date; 61 people were killed at Sherman, and 150 injured; 3 were killed at Gribble Springs, 2 at Justin, and 12 at Howe and vicinity. The property loss is variously estimated at from $150,000 to $200,000.

On the same date 1 person was killed by a tornado at Moundridge, Kans., and 5 others were injured.

16th.—Sherrard, Ill., was visited by a strong wind in the afternoon of this date. An unfinished church was blown down killing 1 man and injuring others. The damage to property aggregated $15,000.

17th.—A tornado passed over the northwestern corner of Graves and Marshall counties, Ky., on this date, destroying the residence of Anderson Jones, at Elva, and killing the entire family of 5 persons.

On the same date a series of very destructive tornadoes passed through the northeastern part of Kansas and southeastern Nebraska, crossed the Missouri River near Rulo, Nebr., and disappeared in Missouri. The formation was first observed south of Barnes, Washington County, Kans., about 4.30 p. m. Its motion was reported as being southeasterly to Irving in Marshall County, thence northeasterly to Frankfort. At the last-named place, although 40 dwellings were either razed to the ground or badly damaged, no one was killed, the people having fled to caves and cellars on the approach of the tornado.

From Frankfort the tornado's course was northeasterly, passing through the towns of Baileyville, Seneca, Oneida, Sabetha, and Reserve, Kans., and Falls City, Nebr. The storm's course in Missouri does not seem to have been marked by loss of life or destruction of property. Twenty-five lives were lost in Kansas and Nebraska, and 73 injured. It is estimated that the damage to property will not fall far short of $300,000.

19th.—A very severe thunderstorm passed over Eldon, Mo.; 9 people were injured, and the loss to property was estimated at $40,000. On the same date a tornado passed through Rock County, Kans. The loss of property was about $3,000.

20th.—Tornadoes were reported from three different sections of Kansas, viz: the southern end of Lyon County, 7 miles south of Emporia; at Maple Hill, about 15 miles north of Topeka, in Cowley County, and also in the eastern portion of Kay County, Cherokee Strip. No lives were lost and the property loss was small.

24–25th.—Severe storms, in some places assuming the character of tornadoes, visited Iowa on the night of the 24th and the morning of the 25th, and northern Illinois in the early morning of May 25, 1896. The greatest destruction was in Polk and Jasper counties, Iowa, and near Chicago, Ill. An independent series of tornadoes also occurred in Oakland, Macomb, and Lapeer counties, Mich; 19 people were killed in Iowa; 8 in Illinois, and 47 in Michigan. The number injured is unknown. The property loss in Iowa was about $75,000; in northern Illinois, about $15,000; near Chicago, about $80,000, and in Michigan, nearly $400,000. A tornado was observed west of Bangor, S. Dak., on the 25th. The property loss was small and no one was injured.

26th.—A tornado occurred at Wickliffe, Ky. No one was hurt and the damage was not great.

27th.—The St. Louis tornado and the violent storms in portions of Missouri and Illinois on this date form the subject of a separate article (see page 77).

28th.—A series of tornadoes occurred throughout eastern Pennsylvania and in New Jersey on this date; 1 person was killed at Columbia, Pa., and 20 were injured; 4 were killed in Montgomery and Bucks counties, Pa., and 4 injured.

Further details are awaited respecting tornadoes in Oklahoma and a few other points.

Recapitulation for May (the storms of May 27 at St. Louis and other points in Missouri and Illinois being given separately):

Number of tornadoes	24
Number of lives lost	209
Number of persons injured	Unknown.
Property loss (estimated)	$888,158
May 27 and 28	13,004,900
Total	$13,893,058
Loss of life by the tornadoes of May 27 at St. Louis and at other points in Missouri and Illinois	306
Total deaths by windstorms	515
Losses of life by drowning during the month not directly chargeable to tornadoes	61
Losses of life by lightning	65
Grand total	641

METEOROLOGICAL TABLES.

By A. J. HENRY, Chief of Division of Records and Meteorological Data.

For text descriptive of these tables see p. 46.

TABLE I.—*Climatological data for Weather Bureau Stations, March, 1896.*

Stations.	Elevation above sea-level, feet.	Length of record, years.	Pressure in inches.			Temperature of the air, in degrees Fahrenheit.								Humidity and precipitation.				Wind.			Clear days.	Partly cloudy days.	Cloudy days.	Average cloudiness, tenths.	Monthly temperature data since opening station.			
			Mean pressure, 8 a. m. and 8 p. m. ÷ 2.	Mean reduced.	Departure from normal.	Mean max. and min. ÷ 2.	Departure from normal.	Maximum.	Date.	Mean maximum.	Minimum.	Date.	Mean minimum.	Greatest daily range.	Mean temperature of the dew-point.	Mean relative humidity, per cent.	Precipitation, in inches.	Departure from normal.	Days with .01, or more.	Total movement, miles.	Prevailing direction.	Maximum velocity. Miles per hour.	Maximum velocity. Direction.	Maximum velocity. Date.				Absolute maximum.	Year.	Absolute minimum.	Year.
New England.						35.3	— 2.6										5.43	+ 1.2											
Eastport	76	33	29.75	29.84	— .04	27.9	— 0.7	48	26	34	7	8	22	22	20	72	2.72	+ 0.3	15	13,087	w.	60	e.	1	6	10	15	6.8	54	1889	— 8	1890
Portland, Me	108	35	29.75	29.86	— .06	28.0	— 0.7	51	1	35	— 7	8	14	22	14	80	8.02	+ 4.6	14	8,371	w.	39	s.	19	9	9	13	5.7	71	1894	— 7	1872
Northfield	872	10	28.96	29.96	— .02	19.9	— 5.4	50	1	30	— 15	18	24	10	11	77	6.41	+ 3.1	16	9,344	n.	50	ne.	11	12	9	10	5.5	74	*	— 15	*
Boston	125	36	29.77	29.91	— .04	32.8	— 1.6	52	19	39	13	4	25	27	23	73	5.97	+ 2.1	17	11,992	n.	58	nw.	3	13	6	12	5.2	58	1880	5	1875
Nantucket	14	10	29.89	29.90	— .10	31.6	— 4.2	54	26	31	16	6	25	28	25	86	4.83	0.0	15	15,857	w.	72	ne.	11	7	12	12	6.3	59	1891	6	1886
Woods Hole	.....	18	.....	.....	.....	35.6	— 0.6	60	26	38	16	14	24	18	26	77	5.70	+ 1.3	16	15,624	nw.	.....	.....	.....	14	4	14	.....	63	1890	0	1885
Vineyard Haven	.....	10	.....	.....	.....	32.6	— 2.4	54	31	38	9	14	24	24	22	70	5.14	+ 1.1	19	10,351	nw.	50	ne.	11	13	4	14	5.3	69	1890	0	1885
Block Island	37	16	29.91	29.94	— .02	31.6	— 1.7	61	31	38	9	14	24	24	22	70	4.53	— 0.1	13														
Narragansett Pier	.....	14	.....	.....	.....	30.8	— 3.6	62	.....	.....	.....	.....	.....	.....	.....	.....	5.61	+ 0.8	16														
New Haven	107	34	29.83	29.93	— .04	37.8	— 3.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	4.15	+ 0.2															
Mid. Atlan. States.						38.5	— 3.4	68	31	35	— 3	14	19	30	25	73	4.66	+ 1.7	15	8,270	w.	38	w.	4	12	10	9	5.3	72	1879	3	1872
Albany	314	26	29.63	29.98	— .02	37.1	— 5.9	58	31	40	13	*	25	30	23	78	6.13	+ 2.0	17	14,979	nw.	72	nw.	7	10	8	13	5.6	75	1894	5	1872
New York	377	8	29.62	30.05	— .02	32.1	— 5.1	62	30	40	6	14	25	30	24	64	3.85	+ 0.2	10	8,163	w.	37	nw.	3	14	5	12	5.1	77	1894	6	1896
Harrisburg	117	26	29.88	30.01	— .01	32.8	— 3.4	66	30	44	15	24	28	31	24	61	4.11	+ 1.0	14	10,373	nw.	50	s.	19	12	7	12	5.1	82	1894	5	1873
Philadelphia	142	26	29.87	30.03	— .00	35.8	— 3.2	63	30	46	16	13	30	34	27	67	4.70	+ 0.6	14	8,038	nw.	50	nw.	3	16	5	10	4.3	83	1894	4	1873
Baltimore	112	26	29.93	30.06	+ .02	38.1	— 4.0	69	30	48	14	13	29	34	.....	.....	5.16	+ 1.0	11	8,158	nw.	44	nw.	2	10	11	10	5.2	86	1894	12	1883
Washington	.....	22	.....	.....	.....	38.5	— 2.9	70	7	55	24	14	37	34	33	73	1.38	— 3.8	12	4,945	nw.	30	nw.	11	14	8	9	4.4	88	1894	14	1888
Cape Henry	685	25	29.31	30.07	+ .02	46.0	+ 0.9	74	30	54	21	*	33	34	33	72	5.54	+ 1.7	12	9,174	nw.	38	sw.	.....	.....	.....	.....	.....	.....	.....	18	1893
Lynchburg	567	26	29.98	30.05	+ .01	43.3	— 2.5	73	30	55	28	14	37	29	26	72	1.67	— 2.9	8													26	*
Norfolk	.....	.....	.....	.....	.....	46.1	— 0.9	76	30	.....	.....	.....	.....	.....	.....	.....	2.60	— 2.1	.....													.....	.....
S. Atlantic States.						52.4	— 1.3	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.55	— 3.2	5	6,671	s.	40	sw.	19	9	14	8	4.8	85	1894	20	1876
Charlotte	773	18	29.24	30.07	+ .03	48.2	— 2.6	77	30	59	26	21	38	30	22	77	3.52	— 2.9	9	13,044	nw.	54	n.	17	11	15	5	4.3	75	1894	30	*
Hatteras	11	16	30.06	30.07	+ .02	48.8	— 0.9	67	30	55	30	4	40	29	22	77	2.41	— 2.8	8	13,741	nw.	58	sw.	11	16	9	6	4.0	82	1894	20	*
Kittyhawk	9	20	30.05	30.06	+ .01	46.8	— 0.8	74	30	59	33	14	43	29	21	80	3.26	— 1.7	10	6,579	nw.	48	sw.	19	10	12	9	5.3	89	1894	30	1873
Raleigh	388	10	29.65	30.08	+ .01	48.2	— 0.1	78	30	62	28	14	39	32	27	83	1.98	— 2.2	8	8,482	sw.	48	sw.	11	15	13	3	3.9	87	1894	25	1890
Wilmington	78	26	30.01	30.10	+ .05	52.2	— 1.5	78	30	65	28	21	41	36	32	80	3.64	— 0.4	4	7,132	sw.	36	sw.	13	15	13	3	4.0	85	1892	30	1893
Charleston	52	26	30.08	30.13	+ .06	55.5	— 1.2	81	31	64	28	21	48	36	.....	.....	1.52	— 3.0	8		ne.	.....	.....	19	11	11	9	5.0	89	1882	22	1873
Columbia	.....	9	.....	.....	.....	52.4	— 1.8	85	31	65	28	21	42	36	.....	.....	1.41	— 3.8	6	5,656	w.	32	w.	16	15	12	4	4.2	88	*	26	*
Augusta	180	25	29.90	30.10	+ .04	54.0	— 2.1	87	31	65	34	21	47	30	30	64	3.19	— 0.5	5	7,193	s.	32	s.	16	15	10	2	3.5	88	*	27	1890
Savannah	98	26	30.02	30.13	+ .03	57.6	— 1.2	88	31	71	35	21	50	30	30	70	2.51	— 0.8	5	5,641	se.	35	sw.	11	12	13	6	4.3	87	*	33	1890
Jacksonville	43	25	30.07	30.12	+ .03	60.8	— 1.2	88	31	71	43	21	61	24	20	75	2.04	0.0	.....								5	3.5	89	1874	48	1890
Florida Peninsula.						67.7	— 1.7	.....	.....	.....	.....	.....	.....	.....	.....	.....	2.35	+ 0.6	6	8,016	s.	39	sw.	16	18	8	5	3.6	87	1894	32	1893
Jupiter	98	9	30.09	30.12	+ .02	67.6	— 2.4	92	31	74	43	21	61	24	21	78	1.61	+ 0.4	7	8,884	ne.	44	nw.	11	18	9	4	3.6	87	1894	17	*
Key West	22	26	30.10	30.12	+ .02	70.6	— 1.9	92	31	74	38	21	55	30	25	80	2.16	— 0.9	5	5,237	n.	36	s.	19	19	9	12	5.8	83	1895	25	1890
Tampa	36	6	30.08	30.12	+ .02	64.9	— 0.9	85	31	74	.....	.....	.....	.....	.....	.....	4.98	— 0.9	.....								14	6.1	83	1884	25	1890
East Gulf States.						56.6	— 2.1	.....	.....	.....	.....	.....	.....	.....	.....	.....	3.29	— 2.9	12	8,762	nw.	44	sw.	18	6	14	11	6.1	85	1879	25	1890
Atlanta	1,131	18	28.91	30.13	+ .08	49.2	— 2.3	80	29	59	24	12	40	29	23	70	6.97	+ 1.5	8	7,615	se.	31	nw.	11	8	10	12	6.5	87	1896	21	1890
Pensacola	56	17	30.05	30.11	+ .01	58.5	— 2.0	73	29	66	34	20	50	29	26	80	7.59	+ 0.2	9	6,477	s.	41	nw.	11	8	10	13	5.6	87	*	17	1892
Mobile	57	26	30.07	30.13	+ .04	57.4	— 2.1	78	2	65	32	12	46	29	26	75	4.58	— 1.5	10	5,847	nw.	41	nw.	11	8	11	12	6.0	85	*	17	*
Montgomery	221	24	29.86	30.10	+ .01	55.4	— 2.1	87	30	65	32	12	45	29	25	75	4.73	— 1.6	10	5,345	s.	38	w.	11	14	8	9	4.9	85	*	30	1890
Meridian	358	7	29.70	30.09	— .01	54.8	— 2.6	85	31	66	30	13	47	29	25	75	3.23	— 3.1	9	7,014	se.	32	nw.	11	9	11	11	5.5	84	1879	30	1890
Vicksburg	254	25	29.78	30.05	— .03	56.3	— 1.3	81	31	69	41	20	55	29	25	75	5.29	— 0.4	9	7,670	se.	.....	.....	.....	8	5	18	.....	.....	.....	.....	.....
New Orleans	54	26	30.04	30.10	+ .03	61.2	— 1.3	81	31	68	44	*	54	30	28	80	4.17	+ 0.6	6	.....	se.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Port Eads	.....	10	.....	.....	.....	59.6	— 2.2	77	31	65	.....	.....	.....	.....	.....	.....	2.47	0.0	.....								15	6.1	90	1882	22	1890
West Gulf States.						56.8	— 2.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	3.37	— 1.4	10	6,894	se.	38	nw.	11	8	10	6	6.8	87	1895	14	1893
Shreveport	249	25	29.78	30.04	— .02	56.6	— 1.9	82	*	67	30	13	46	32	28	83	2.95	+ 0.1	13	6,618	e.	36	w.	18	8	5	18	6.8	87	1895	16	1893
Port Smith	481	14	29.52	30.04	.00	49.0	— 2.6	84	28	58	27	20	41	31	28	83	4.30	— 0.6	11	6,826	ne.	33	nw.	21	6	11	14	6.1	85	1884	28	1890
Little Rock	302	17	29.76	30.09	+ .01	49.5	— 4.1	78	29	69	42	16	58	28	25	83	0.62	— 1.0	7	10,202	ne.	36	se.	21	9	12	10	5.4	85	1879	30	1890
Corpus Christi	20	10	30.00	30.02	— .03	63.4	— 1.6	80	31	72	45	16	56	16	16	55	3.50	+ 0.4	9	9,106	se.	44	nw.	21	8	8	15	6.3	87	1880	30	1890
Galveston	42	25	30.03	30.07	+ .02	60.9	— 1.6	82	31	68	39	20	48	37	26	83	1.77	— 2.5	7	6,468	se.	26	se.	18	8	7	16	6.3	93	*	21	1890
Palestine	510	15	29.50	30.05	— .02	60.9	— 1.3	90	31	72	35	16	50	34	27	70	0.66	— 1.9	7	7,562	se.	48	n.	18	.....	.....	.....	.....	.....	.....	.....	.....
San Antonio	704	19	29.29	30.04	— .01	62.0	— 1.6	84	29	58	38	12	48	31	28	83	4.37	— 0.1	.....								30	8	12	11	5.8	88	1895	15	*
Ohio Val. & Tenn.						48.1	— 2.9	84	29	58	24	12	35	31	28	83	3.21	— 3.2	11	7,132	s.	37	s.	30	10	6	15	6.2	83	1895	6	1873
Chattanooga	762	18	29.30	30.12	+ .04	45.4	— 2.9	81	30	57	27	13	41	28	24	71	5.30	— 0.4	16	5,261	ne.	36	w.	11	8	9	14	6.2	87	1895	16	1893
Knoxville	990	26	29.65	30.09	+ .03	48.9	— 3.6	78	30	57	29	13	37	33	28	83	4.78	— 1.0	14	6,463	nw.	36	se.	28	8	9	14	6.1	86	1894	11	1873
Memphis	345	26	29.50	30.10	+ .04	45.4	— 3.6	80	29	46	13	12	33	34	29	69	6.45	+ 0.7	14	10,408	w.	48	se.	28	9	7	15	6.5	85	1895	6	1890
Nashville	989	13	29.30	30.09	+ .04	47.7	— 6.7	85	28	48	16	13	32	37	29	72	5.41	— 0.7	15	7,268	nw.	35	sw.	28	8	9	14	6.1	86	1895	3	1873
Lexington	525	25	29.52	30.11	+ .04	40.0	— 5.9	71	30	44	12	*	28	35	26	80	4.86	+ 0.7	14	5,531	nw.	25	se.	28	8	12	11	6.1	82	1895	3	1885
Louisville	766	26	29.25	30.11	+ .07	36.0	— 3.9	68	29	45	12	13	29	35	27	80	3.08	— 0.9	14	7,051	nw.	34	nw.	19	6	12	13	6.3	79	1895	1	1873
Indianapolis	628	26	29.42	30.12	+ .06	36.8	— 6.0	68	30	42	9	13	26	33	28	81	3.20	— 0.3	13	6,425	w.	30	nw.	11	7	12	12	6.4	80	1870	1	1885
Cincinnati	824	18	29.19	30.10	+ .06	33.7	— 5.1	67	29	42	9	13	25	32	27	75	3.04	— 0.2	14	5,942	nw.	24	nw.	21	7	10	5	16	6.1	86	1894	2	1877
Columbus	842	26	29.15	30.09	+ .05	32.9	— 6.4	68	28	44	6	24	26	42	27	78	4.13	+ 1.4	17	5,522	w.	38	w.	.....	.....	.....	.....	.....	.....	.....	4	1890
Pittsburg	698	8	29.40	30.11	+ .02	35.2	— 6.1	.....	.....	.....	.....	.....	.....	.....	.....	.....	4.58	+ 1.3	17														
Parkersburg	.....	.....	.....	.....	.....	37.9	— 4.4	.....	.....	.....	.....	.....	.....	.....	.....	.....	3.49	— 0.8	.....								7	6	16	9	6.4	72	1875	— 4	1885
Lower Lake Region.						35.3	— 4.5	59	29	33	5	13	18	30	19	78	3.61	— 0.9	12	13,237	w.	42	sw.	7	6	10	15	6.4	72	1894	— 11	1872
Buffalo	600	26	29.18	30.06	+ .06	24.5	— 5.2	50	29	31	3	24	18	28	17	79	4.79	— 2.1	15	11,794	nw.	42	sw.	14	6	11	5	5.1	77	1894	— 7	*
Oswego	335	26	29.02	30.01	+ .01	25.4	— 4.8	61	29	33	4	13	18	31	17	73	6.32	+ 3.4	21	8,099	w.	42	se.	28	5	13	13	6.7	78	1875	— 4	1885
Rochester	523	26	29.44	30.03	+ .03	28.2	— 4.8	67	29	36	8	24	21	35	21	83	3.41	+ 0.5	11	9,506	w.	52	nw.	19	4	12	15	6.8	76	1894	— 3	1885
Erie	714	23	29.36	30.07	+ .06	30.2	— 3.1	65	29	37	8	13	24	32	24	80	2.64	— 0.3	13	11,980	w.	37	nw.	20	7	6	17	6.8	76	*	— 3	1873
Cleveland	740	26	29.25	30.08	+ .04	30.3	— 4.0	68	29	36	6	12	22	30	20	72	2.38	— 0.2	10	7,941	n.	37	nw.	25	8	10	13	6.1	75	*	— 3	1872
Sandusky	629	19	29.37	30.08	+ .04	30.8	— 4.0	65	29	36	4	12	22	26	20	72	2.51	+ 0.4	12	8,487	nw.	37	sw.	25	11	12	8	5.0	75	1875	— 7	1872
Toledo	674	26	29.34	30.10	+ .06	28.8	— 5.1	64	29	36	.....	.....	.....	.....	.....	.....	2.28	— 0.1	10	8,878	nw.	37	sw.	.....	.....	.....	.....	.....	.....	.....	.....	.....
Detroit	794	26	29.27	30.08	+ .06	24.7	— 2.1	.....	.....	.....	0	13	16	30	16	76	1.41	— 0.7	.....								22	9	14	8	5.0	77	1894	— 19	1884
Upper Lake Region.						25.0	— 0.6	52	30	30	5	12	22	28	22	74	0.49	— 1.6	11	8,899	nw.	38	nw.	35	5	9	17	6.7	71	1878	— 5	1885
Alpena	609	24	29.36	30.06	+ .04	28.5	— 2.7	63	30	35	9	13	22	31	20	78	1.64	— 0.7	16	8,306	ne.	52	s.	24	3	10	18	7.5	70	1878	— 16	1884
Grand Haven	638	25	29.36	30.07	+ .02	21.6	— 0.8	49	30	29	2	13	20	28	14	74	1.30	— 0.3	20	9,488	nw.	46	nw.	19	10	14	7	5.1	73	1875	— 14	1885
Marquette	734	25	29.22	30.06	+ .07	25.9	— 3.0	61	29	32	9	13	20	28	17	75	1.47	— 1.5	9	10,012	n.	43	nw.	21	10	14	6	5.3	57	1894	— 27	1890
Port Huron	639	22	29.36	30.09	+ .07	16.4	— 5.6	44	31	27	6	12	22	23	17	70	1.06	— 0.2	10	6,964	nw.	37	s.	21	10	14	7	4.6	80	1895	— 12	1873
Sault Ste. Marie	642	8	29.33	30.07	+ .03	31.2	— 3.1	58	30	37	— 2	12	18	25	21	71	1.35	— 1.3	9	13,725	n.	35	w.	29	11	11	9	5.1	70	1878	— 8	1884
Chicago	824	26	29.16	30.06	+ .04	28.7	— 1.5	53	30	35	— 4	12	18	25	17	77	2.82	+ 0.3	9	9,215	nw.	34	s.	24	7	10	14	6.8	69	1894	— 23	1890
Milwaukee	673	26	29.32	30.06	+ .05	25.2	— 0.3	54	30	30	6	12	14	33	15	77	1.19	— 1.3	10	7,578	s.	42	ne.	31	10	10	11	5.2	64	1889	— 26	1875
Greenbay	617	10	29.39	30.06	+ .04	22.2	— 1.7	54	.....	.....	.....	.....	.....	.....	.....	.....	1.59	+ 0.1	14	9,373	ne.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Duluth	702	26	29.25	30.06	+ .01	17.1	— 6.1	.....	.....	.....	— 28	13	4	47	10	65	1.37	+ 0.6	12	8,463	n.	48	nw.	21	7	12	12	6.2	68	1889	— 28	1896
North Dakota.						14.4	— 6.1	48	24	25	— 14	1	8	40	8	61	1.48	— 0.7	8	7,129	nw.	44	nw.	21	2	24	5	5.6	72	1895	— 33	1891
Moorhead**	935	16	29.02	30.11	+ .01	19.0	— 5.2	69	24	30	— 14	1	8	42	13	82	0.84	— 0.2	8	7,041	n.	56	nw.	21	8	11	12	6.3	72	1889	— 32	1891
Bismarck	1,681	22	28.24	30.14	+ .04	18.0	— 6.9	55	24	28	— 16	.....	.....	.....	.....	.....	1.80	+ 1.4	13														
Williston	1,875	18	28.00	30.12	+ .04	13.1	— 3.3	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.05	0.6	.....								8	13	10	.....	76	1894	— 7	1893
Upper Miss. Valley.						26.2	— 3.3	58	30	36	— 5	13	17	33	16	70	2.70	+ 1.2	10	.....	nw.	38	nw.	21	7	15	9	5.5	76	1894	— 22	1873
Minneapolis	.....	7	.....	.....	.....	25.1	— 3.4	58	30	37	— 4	*	17	36	.....	.....	2.96	+ 1.5	10	6,937	nw.	38	nw.	25	8	15	8	5.7	78	1894	— 23	1873
St. Paul	860	25	29.11	30.06	+ .02	27.0	— 3.7	62	30	37	— 4	9	18	25	23	69	0.60	— 1.0	9	6,616	s.	28	s.	28	9	10	12	5.9	82	1895	— 8	1884
La Crosse	.....	24	.....	.....	.....	33.0	— 1.9	71	31	42	8	13	22	30	20	61	0.84	— 1.3	9	8,197	nw.	46	sw.	28	8	8	15	6.4	88	1895	— 8	1890
Davenport	613	25	29.36	30.06	— .00	32.2	— 2.8	71	31	40	2	12	23	33	.....	.....	1.24	— 0.1	9	.....	n.	.....	.....	.....	14	6	11	.....	86	1895	— 12	1890
Des Moines	869	18	29.13	30.11	+ .05	31.6	— 1.6	66	31	45	10	13	28	31	24	66	0.76	+ 1.5	9	6,736	nw.	38	sw.	28	11	10	10	5.1	84	1879	10	*
Dubuque	.....	25	.....	.....	.....	36.0	— 1.9	73	29	50	22	13	37	29	24	74	0.88	— 1.3	10	7,464	n.	36	nw.	25	8	7	16	6.3	84	1895	2	1890
Keokuk	613	25	29.40	30.06	+ .04	43.0	— 4.1	70	29	50	14	12	28	33	24	70	3.97	+ 0.1	11	8,232	nw.	36	s.	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cairo	359	25	29.68	30.06	+ .04	46.2	— 3.7	71	31	44	.....	.....	.....	.....	.....	.....	1.25	— 1.3	13														
Springfield, Ill.	644	17	29.38	30.09	+ .03																											

TABLE I.—*Climatological data for Weather Bureau Stations, March*, 1896—Continued.

Stations.	Elevation above sea-level, feet.	Length of record, years.	Pressure, in inches.			Temperature of the air, in degrees Fahrenheit.								Humidity and precipitation.				Wind.					Clear days.	Partly cloudy days.	Cloudy days.	Average cloudiness, tenths.	Monthly temperature data since opening station.			
			Mean pressure, 8 a. m. and 8 p. m. +2.	Mean reduced.	Departure from normal.	Mean max. and min. +2.	Departure from normal.	Maximum.	Date.	Mean maximum.	Minimum.	Date.	Mean minimum.	Greatest daily range.	Mean temperature of the dew-point.	Mean relative humidity, per cent.	Precipitation, in inches.	Departure from normal.	Days with .01, or more.	Total movement, miles.	Prevailing direction.	Maximum velocity. Miles per hour.	Maximum velocity. Direction.	Maximum velocity. Date.				Absolute maximum.	Year.	Absolute minimum	Year.
Up. Miss. Val.—Con																													
Hannibal	534	....	29.48	30.08	.....	37.4	.....	77	31	46	12	13	29	36	27	69	0.92	— 1.3	12	7,590	nw.	42	sw.	25	8	12	11	5.5	....	....	.....	....
St. Louis	571	26	29.48	30.11	+ .05	40.6	— 3.2	74	31	49	19	13	32	34	30	72	2.03	— 1.5	12	8,998	nw.	48	sw.	28	9	12	10	5.2	85	1895	6	1890
Missouri Valley.						32.8	— 4.3										1.33	— 0.5													
Columbia	.....	7	.....	.....	.....	39.8	— 1.3	81	31	50	11	13	29	44	.....	.....	1.13	— 1.8	9	7,969	nw.	37	sw.	28	7	6	18	6.9	85	1895	— 6	1890
Kansas City	963	8	29.04	30.11	+ .04	38.4	— 3.9	77	31	48	12	13	29	41	29	74	1.09	— 0.9	10	7,409	nw.	28	nw.	19	8	15	8	5.3	88	1895	2	1891
Springfield, Mo	1,324	11	28.62	30.07	+ .02	40.2	— 4.8	76	31	49	14	13	32	32	30	72	3.40	0.0	10	9,027	se.	36	se.	27	6	11	14	6.5	86	1895	3	1896
Topeka	.....	9	.....	.....	.....	39.6	— 2.4	76	30	51	12	13	28	40	.....	.....	0.62	— 1.5	8	.....	n.	....	.....	...	11	10	10	....	91	1895	— 1	1891
Omaha	1,123	26	28.87	30.12	+ .03	31.6	— 4.9	70	31	41	2	13	22	42	21	66	1.31	— 0.2	10	6,564	nw.	44	nw.	18	6	11	14	6.4	85	1895	— 7	1880
Sioux City	1,165	7	.....	.....	.....	27.2	— 3.6	66	30	39	— 2	13	16	40	.....	.....	0.50	— 0.8	8	2,980	nw.	44	n.	31	8	12	11	6.0	83	1895	—14	1891
Pierre	1,470	21	28.46	30.11	+ .02	24.6	— 5.7	78	24	34	— 8	3	15	45	17	74	0.85	+ 0.2	9	7,468	e.	40	nw.	18	6	11	14	6.4	84	1895	—24	1891
Huron	1,310	15	28.63	30.12	+ .02	21.2	— 7.8	74	24	32	—16	13	10	46	13	73	1.71	+ 1.1	14	10,560	nw.	54	se.	27	5	13	13	6.3	79	1894	—24	1891
Northern Slope.						27.5	— 5.5										1.37	+ 0.7													
Havre	2,477	16	27.33	30.07	+ .02	23.8	— 6.1	64	23	34	—32	3	13	38	18	78	0.67	+ 0.1	6	7,448	sw.	44	nw.	24	12	14	5	4.7	72	1895	—34	1891
Miles City	2,372	19	27.45	30.06	— .02	26.0	— 5.4	74	24	36	—15	3	16	43	18	73	0.28	— 0.3	9	6,031	n.	32	w.	15	7	18	11	6.1	77	1895	—25	1879
Helena	4,108	16	25.79	30.15	— .09	28.6	— 5.4	62	23	37	—18	3	20	31	17	62	1.71	+ 1.1	8	6,559	sw.	40	w.	10	13	7	11	5.0	72	1893	—20	1891
Rapid City	3,260	11	26.55	30.08	— .02	26.1	— 5.6	73	24	37	—12	3	16	44	15	67	1.35	+ 0.4	16	7,545	nw.	44	nw.	15	1	16	14	7.0	78	1893	—17	1891
Cheyenne	6,105	26	23.88	30.12	+ .04	29.4	— 5.6	66	24	39	— 2	*	20	37	16	60	2.06	+ 1.4	11	11,165	nw.	52	nw.	27	2	22	7	6.3	77	1879	—17	1880
Lander	5,377	14	24.55	30.10	+ .02	28.4	— 4.1	62	24	40	—22	3	16	44	15	61	2.63	+ 1.7	11	3,747	sw.	42	nw.	11	6	18	7	5.8	74	1882	—22	1896
North Platte	2,826	22	27.06	30.13	+ .04	30.4	— 6.6	80	24	42	— 8	15	18	50	21	72	0.87	+ 0.2	11	8,780	nw.	44	nw.	28	8	17	6	5.4	86	1879	—21	1880
Middle Slope.						40.0	— 3.3										1.02	— 0.6													
Denver	5,290	25	24.64	30.09	+ .03	37.4	— 2.7	76	24	50	0	3	25	40	20	60	1.43	+ 0.6	9	7,599	nw.	60	sw.	27	2	22	7	5.7	81	1879	—11	1886
Pueblo	4,734	8	25.19	30.05	+ .04	38.8	— 3.2	80	25	53	8	3	25	49	10	40	0.89	+ 0.4	10	7,412	nw.	50	n.	17	9	14	8	5.4	82	1893	— 9	1892
Concordia	1,410	11	28.54	30.10	— .01	36.2	— 3.3	82	27	47	5	15	25	41	22	65	1.02	— 0.9	8	7,234	nw.	38	s.	27	13	8	10	4.9	93	1895	— 2	*
Dodge City	2,504	22	27.38	30.06	+ .03	40.0	— 3.2	87	27	54	11	18	26	53	22	60	0.25	— 0.6	7	9,679	ne.	50	sw.	27	16	9	6	4.3	90	1895	— 8	1880
Wichita	1,351	8	28.59	30.07	+ .04	41.4	— 3.1	80	30	52	17	13	30	38	28	69	1.58	— 0.9	11	8,790	n.	41	s.	27	11	11	9	5.5	91	1895	3	1892
Oklahoma	1,239	....	28.72	30.07	+ .02	46.4	— 4.1	83	30	57	23	15	36	37	34	70	1.03	— 2.0	9	8,545	n.	42	n.	31	18	4	9	4.3	....	....	.....	....
Southern Slope.						.....	.....								.....	.....	.....	.....													
Abilene	1,749	11	28.19	30.04	— .01	54.6	— 1.4	90	21	68	23	16	41	42	34	56	0.14	— 1.4	4	9,002	n.	44	nw.	6	8	20	3	5.0	92	*	17	1891
Amarillo	3,691	....	26.21	30.05	.....	43.1	.....	82	25	57	14	18	29	45	19	50	0.21	.. ..	6	14,634	s.	62	n.	31	13	8	10	5.2	....	....	.....	....
Southern Plateau.						56.6	+ 1.0										0.34	— 0.2													
Elpaso	3,767	18	26.15	29.97	— .02	58.6	+ 2.3	89	25	73	26	7	44	44	16	26	T.	— 0.5	0	10,590	nw.	62	sw.	4	15	14	2	3.5	89	96	21	1870
Santa Fe	6,998	24	23.17	29.99	— .02	40.5	+ 0.5	69	25	51	15	7	30	32	11	35	0.53	— 0.1	5	6,283	nw.	40	sw.	4	14	10	7	4.5	82	1879	0	1888
Phœnix	1,106	....	28.79	29.96	.....	62.0	+ 1.0	92	25	76	34	6	48	43	32	38	0.39	— 0.3	3	3,824	w.	36	sw.	3	12	9	10	4.7	....	....	.....	....
Yuma	141	21	29.79	29.94	— .05	65.1	0.0	99	25	79	37	5	51	43	35	39	0.43	+ 0.2	2	5,735	nw.	39	n.	31	13	13	5	3.8	100	1879	31	1881
Middle Plateau.						40.4	— 1.2										1.75	+ 0.4													
Carson City	4,720	9	25.27	30.08	.....	41.9	— 0.3	67	24	53	14	5	31	39	22	46	1.82	+ 0.4	11	.....	sw.	....	.....	...	14	5	12	5.0	73	1892	12	1890
Winnemucca	4,340	18	25.64	30.08	+ .02	39.1	— 1.6	68	19	50	10	2	29	42	21	53	1.43	+ 0.6	15	8,581	sw.	50	sw.	6	5	17	9	5.5	82	1879	— 3	1892
Salt Lake City	4,344	22	25.61	30.10	.00	40.2	— 1.8	70	24	49	14	2	31	31	27	62	1.99	+ 0.1	16	4,382	nw.	38	s.	27	4	11	16	7.4	77	1879	0	1890
Northern Plateau.						37.6	0.0										1.60	0.0													
Baker City	3,430	7	26.42	30.02	.00	36.8	+ 1.9	62	19	46	8	2	28	31	24	61	1.09	— 0.7	15	4,195	s.	26	nw.	13	5	14	12	6.1	65	1895	3	1893
Idaho Falls	4,742	7	25.18	30.11	+ .03	31.4	+ 1.4	63	24	41	—15	2	22	35	24	77	3.41	+ 1.7	14	7,409	s.	34	s.	6	6	8	17	6.6	67	1895	—15	*
Spokane	1,930	16	27.99	30.08	+ .06	38.2	— 1.5	63	18	47	6	2	29	32	24	60	0.74	— 0.6	9	5,644	sw.	36	sw.	20	8	7	16	6.3	74	1881	—10	1891
Walla Walla	1,018	11	28.97	30.08	+ .03	44.1	— 1.8	74	19	53	7	2	35	30	37	78	1.15	— 0.4	10	4,985	s.	32	sw.	29	10	15	6	5.2	74	*	2	1891
N. Pac. Coast Reg.						43.4	+ 2.3										1.41	— 1.7													
East Clallam	.....	....	.....	.....	.....	40.5	.....	61	18	48	22	1	34	29	.....	.....	4.32	.....	13	.....	e.	.....	.....	...	11	3	17	....	.....	.....	.....	.....
Fort Canby	179	13	29.84	30.04	+ .01	43.8	— 1.6	65	18	50	22	2	38	21	39	86	4.83	— 1.2	17	9,024	n.	57	s.	28	10	5	16	6.1	70	1889	22	1896
Neah Bay	.....	12	.....	.....	.....	42.0	— 3.2	57	16	49	24	*	35	21	.....	.....	7.21	— 3.3	13	.....	e.	.....	.....	...	7	10	14	....	65	1885	22	1891
Port Angeles	29	12	30.01	30.04	+ .02	39.6	— 2.1	56	13	47	18	3	33	22	31	73	1.72	— 0.4	11	4,998	s.	37	ne.	1	10	14	7	5.1	59	*	18	1096
Port Crescent	.....	....	.....	.....	.....	39.3	.....	57	*	48	30	4	31	30	.....	.....	2.46	.....	12	.....	w.	.....	.....	...	10	9	12	....	.....	.....	.....	.....
Pysht	.....	....	.....	.....	.....	40.1	.....	61	19	48	30	4	32	26	.....	.....	4.11	.....	13	.....	e.	.....	.....	...	6	8	17	....	.....	.....	.....	.....
Seattle	119	....	29.92	30.05	.....	43.1	.....	66	23	50	22	2	36	29	34	72	2.41	.....	14	4,436	se.	30	sw.	24	11	7	13	5.5	....	.....	.....	.....
Tatoosh Island	86	12	29.94	30.04	+ .02	42.2	— 1.9	55	19	46	24	2	38	14	37	80	5.08	— 2.8	16	11,352	e.	52	ne.	2	11	5	15	5.9	64	1885	24	1896
Astoria	.....	12	.....	.....	.....	44.2	— 2.4	61	18	51	24	2	38	23	.....	.....	5.72	— 1.4	15	.....	w.	.....	.....	...	11	7	13	....	72	1889	24	1896
Portland, Oreg	157	25	29.89	30.07	+ .03	45.5	— 3.0	68	18	53	20	2	38	30	34	69	2.19	— 3.8	15	7,474	nw.	38	ne.	2	6	16	9	5.6	79	1886	20	1896
Roseburg	523	19	29.46	30.03	— .04	46.6	— 2.1	70	17	55	18	3	38	36	39	78	4.15	+ 0.9	20	2,735	sw.	20	ne.	14	8	4	19	6.7	81	1887	18	1896
Mid. Pac. C'st Reg.						52.9	0.0										3.73	— 0.3													
Eureka	64	10	30.00	30.06	— .01	50.0	+ 1.3	69	22	56	29	3	44	25	45	85	6.93	+ 1.0	19	4,750	nw.	42	nw.	1	7	15	9	5.6	75	1895	29	1896
Redbluff	334	19	29.68	30.04	.00	53.8	— 1.3	76	17	62	26	4	46	32	43	72	3.06	— 0.3	14	5,364	se.	28	n.	9	9	6	16	6.3	86	1892	16	1896
Sacramento	71	19	29.97	30.05	— .01	55.4	— 0.4	77	24	64	34	3	47	29	46	75	2.57	— 0.7	13	7,160	sw.	48	s.	2	10	8	13	5.1	80	1882	29	1880
San Francisco	153	26	29.90	30.06	— .02	54.3	— 0.2	72	23	60	33	3	48	30	48	79	2.85	— 0.4	13	6,222	w.	35	se.	2	9	12	10	5.4	80	1892	33	1896
Point Reyes Light	.....	8	.....	.....	.....	51.0	+ 0.4	69	23	56	34	3	46	19	.....	.....	3.25	— 1.2	14	.....	nw.	....	.....	...	10	5	16	....	74	1893	30	*
S. Pac. Coast Reg.						57.6	+ 1.2										2.36	+ 0.5													
Fresno	332	9	29.67	30.03	.00	56.3	+ 1.1	83	24	67	32	4	46	34	44	69	1.21	— 0.1	7	3,983	w.	38	se.	2	11	9	11	5.4	84	1893	28	1888
Los Angeles	330	19	29.66	30.01	— .04	58.4	+ 1.3	89	24	70	35	2	47	32	45	70	2.97	+ 0.1	6	2,807	w.	21	nw.	1	9	15	7	4.5	99	1879	31	1893
San Diego	69	25	29.94	30.02	— .05	58.2	+ 1.2	85	24	67	41	*	50	30	47	71	2.89	+ 1.4	5	4,135	nw.	35	sw.	4	11	10	10	4.8	99	1876	36	1894
San Luis Obispo	201	....	29.84	30.06	.....	56.2	.....	85	23	66	32	4	46	43	45	70	3.16	.....	6	3,718	nw.	28	se.	3	10	12	9	4.9	....	....	.....	....

NOTE.—The data at stations having no departures are not used in computing the district averages. Letters of the alphabet denote number of days missing from the record.

*Two or more directions, dates, or years. ** All pressure, dew-point, and humidity values for 23½ days only, remainder of data for 31 days.

TABLE II.—*Meteorological record of voluntary and other cooperating observers, March, 1896.*

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Alabama.	°	°	°	*Ins.*	*Ins.*
Alco†	85	29	58.0	6.32	
Ashville*† [b]	88	28	51.4	4.48	T.
Bermuda†	87	28	57.3	5.89	
Birmingham	84	25	53.0	4.41	
Brewton	86	25	54.8	5.90	
Carrollton*† [l]	82	30	53.7	2.60	1.0
Citronelle†	80	33	59.2	5.08	
Claiborne†				3.37	
Clanton†	84	29	53.5	6.11	T.
Cordova†				4.00	
Daphne†	83	34	59.9	10.05	
Decatur†	85	22	48.2	4.81	T.
Demopolis†				5.91	
Elba†				5.34	
Eufaula *a*†	88	32	56.2	3.99	
Eufaula *c*				4.27	
Evergreen†	85	28	55.4	5.86	T.
Florence *a*†				5.48	
Florence *b*	83	24	49.3	6.51	T.
Fort Deposit †	88	30	54.0	5.06	
Gadsden†	85	25	49.9	3.90	
Goodwater†	85	30	51.4	6.39	0.5
Greensboro†	85	29	52.6	4.36	1.0
Healing Springs†	85	30	54.0	5.08	
Highland Home†	86	32	56.7	4.91	
Jasper	92	25	48.3	4.80	2.0
Livingston†	85	29	55.0	5.86	T.
Lock No. 4				4.25	0.6
Madison Station†	84	22	48.8	4.64	
Marion†	89	28	52.8	4.30	T.
Montgomery					T.
Mount Willing†	89	29	56.2	5.83	
Newbern†	85	29	53.5	4.52	
Newburg†	83	29	50.4	5.90	
Newton†	86	28	55.8		
Oneonta	81	22	48.6	6.89	T.
Opelika†	90	26	56.0	2.48	
Oxanna†	82	28	50.6	3.50	1.0
Pineapple†	90	24	54.0	3.85	
Pushmataha†	86	28	56.1	5.44	T.
Rock Mills	82	26	53.2		1.0
Selma †				6.26	
Sturdevant				4.23	T.
Talladega*[l]	80	28	51.4		
Tallassee Falls				5.55	
Tuscaloosa†	87	26	52.5	5.19	2.0
Tuscumbia	77	25	48.4	5.86	T.
Union†	86	21	53.0	5.43	T.
Union Springs†	87	30	54.6	6.26	T.
Uniontown†	85	31	55.8	5.07	
Valleyhead†	81	23	48.6	5.81	
Warrior				5.59	
Wetumpka				5.54	
Wilsonville				3.81	T.
Alaska.					
Coal Harbor	48	4	31.4	4.80	21.5
Killisnoo†	43	15	31.0	2.30	7.5
Kodiak*[l]	42	14	31.1		
Arizona.					
Antelope Valley †				1.00	2.0
Benson*[b]	90	39	56.1	0.12	
Biabee†	80	27	55.4	0.27	T.
Buckeye†	95	26	62.6	0.30	
Calabasas†	86	24	53.9	0.00	
Casa Grande*[b]	94	39	64.2	0.10	
Dragoon				0.00	
Dragoon Summit*[b]	87	30	62.3	0.49	
Dudleyville †	93	28	58.0	0.65	T.
Eagle Pass*[b]		24	48.0	0.57	6.0
Farleys Camp	95	35	64.8	0.09	
Flagstaff†	69	1	38.0		31.0
Fort Apache	75	6	45.4	0.86	2.0
Fort Grant†	81	25	54.0	0.34	
Fort Huachuca†	82	22	54.2	0.55	1.2
Fort Mohave	103	31	65.8	0.17	
Gilabend *a**[b]	95	45	65.9	1.10	
Gilabend *b*†	101	33	64.9	0.13	
Gisela†	85	21	54.4	1.29	T.
Holbrook†	81	16	46.8	0.17	T.
Ingleside	93	30	61.8	0.38	
Maricopa*[b]	99	38	63.1	0.22	
Mesa†	95	34	62.0	0.46	
Mount Huachuca†	85	22	54.2	0.46	T.
Natural Bridge†				1.00	8.0
Navajo				0.30	3.0
Oracle†	81	24	55.3	1.44	10.2
Oro				0.00	
Oro Blanco	85	33	58.8	0.72	0.2
Pantano*[b]	75	33	56.7	0.24	2.0
Parker	99[f]	34[f]	70.8[f]	0.50	
Peoria†	89	33	61.2	0.34	
Phœnix	89	29	60.5	0.28	
Pinal Ranch				1.05	3.5
Reymert†	87	30	61.2	0.00	
San Carlos†	90	24	56.4	0.50	
San Simon*[b]	83	38	59.3	0.18	1.0
Showlow				0.90	11.0
Signal†	90	29	60.5	0.80	
Sulphur Spring Valley†				0.17	0.8
Texas Hill*[b]	102	39	67.2	0.75	
Tucson *c*†	94	27	61.4	0.27	T.
Walnut Ranch*† [l]	77	20	50.6	0.49	4.0
Wells	95	30	59.5	0.50	
Whipple Barracks†	78	2	43.2	0.81	5.6
Wilgus†				0.50	5.0
Willcox*[b]	82	34	54.7	0.05	0.5
Arkansas.					
Arkansas City†				6.65	1.0
Beebranch†	79	18	47.4	7.45	6.0
Blanchard Springs†	81	23	53.9	4.42	
Brinkley†	80	26	50.2	5.64	T.
Camden *a*†				5.19	T.
Camden *b*†	85	23	52.0	5.34	T.
Conway*[l]	78	25	48.6	5.99	1.0
Corning†	75	19	44 1	6.93	1.1
Dallas†	83[d]	22[d]	49.6[d]	5.69	
Dardanelle†				4.85	
Elon†	84	21	55.0	6.77	T.
Fayetteville†	81	17	45.0	2.83	2.8
Forrest	82[d]	21[d]	50.6[d]	7.62	4.0
Fort Smith					2.1
Fulton†				2.96	
Gaines Landing†				5.78	
Helena *a*†				5.75	T.
Helena *b*†	83	26	49.8	5.75	T.
Hot Springs *a*	84	25	51.6	7.17	
Hot Springs *b*				5.18	
Hot Springs (near)				5.75	
Jonesboro†	75	19	43.9	5.27	2.0
Keesees Ferry†	84	12	45.0	2.34	2.0
Kirby†	81	27	51.3	5.75	T.
Lacrosse†	78	15	43.8	5.12	0.2
Latour				4.96	0.6
Little Rock					T.
Lonoke*[l]	80	26	50.5	6.87	T.
Luna Landing*[b]	78	24	52.7	2.72	
Madding[c]			49.3	5.78	4.0
Malvern†	82	21	48.4	6.25	T.
Mossville	75	16	44.3	5.56	14.5
Mount Nebo†	80	27	46.6	5.85	4.0
New Gascony*[l]	78[d]	24	52.4	4.39	3.0
Newport *a*†				7.68	3.0
Newport *b*†	77	23	46.8	6.63	4.0
Newport *c*†	78	21	47.3	6.73	4.0
Osceola†	77	25	47.3	5.99	1.0
Ozark†	84	24	49.5	4.29	T.
Pine Bluff†	83	24	53.6	4.61	2.5
Pocahontas†	75	17	42.6	6.49	0.8
Prescott				2.97	
Rison†	84	20	49.2	4.45	3.0
Russellville†	84	24	46.4	7.88	
Silver Springs†	80	13	44.2	2.06	3.2
Stuttgart†	79	25	49.8	5.60	T.
Texarkana†	84	28	51.8	2.11	
Warren†	85	24	52.4	7.80	4.0
Washington*† [l]	85	27	52.4	4.12	T.
Winslow†	78	19	44.0	2.41	2.2
Witts Springs†	75	13	43.2	6.00	8.2
California.					
Adin	68	9	41.1	3.42	6.5
Agnew	76	34	57.2	1.34	
Arlington Heights	80	32	58.1	2.84	
Athlone*[b]	84	38	59.5	1.51	
Azusa				6.55	5.0
Ballast Point L. H.				2.50	
Barstow†	88	30	52.4	0.08	T.
Bear Valley†				14.47	70.0
Berkeley	71	34	53.6	2.93	
Bishop†	81	12	46.4	0.93	7.5
Bishop Creek*[b]	77	30	46.3	0.60	4.5
Boca*[b]	71	10	36.7	6.30	31.5
Bodie†	52	−14	25.2	3.28	29.0
Bowmans Dam†				14.95	64.0
Caliente*[b]	81	31	57.0	3.30	3.5
Calloway Canal†				1.61	
Cape Mendocino L. H.				6.88	
Cedarville†	65	8	38.2	2.01	9.5
Centerville*[l]	80	40	58.6	1.66	
Chico*[b]	78	30	55.0	2.99	
Chino*† [c]	86	31	55.5	4.22	
Cisco*[b]	45	14	31.8	8.80	88.0
Claremont†	81	28	54.6	4.42	0.8
Cloverdale*[l]	73	30	56.6	4.77	2.2
Corning*[b]	74	32	53.8	3.95	
Coronado	84	46	63.2	2.89	
Craftonville	86	30	56.6	3.61	T.
Crescent City†	70	29	49.2	6.24	7.0
Crescent City L. H.				6.85	
Davisville *b*	92	32	61.8	2.22	T.
Delano*[b]	87	35	58.9	0.84	
Delta*[b]	78	20	49.2	11.81	20.0
Descanso*[b]	84	30	55.6	8.04	27.0
Drytown	79	28	52.2	6.36	5.0
Dunnigan*[b]	78	30	56.4	2.80	2.0
Durham*[l]	70	26	50.9	2.34	3.0
East Brother L. H.				2.45	
Edgwood*[b]	65	17	44.9	2.68	8.0
Escondido	95	32	57.8	3.64	
Eureka					2.9
Evergreen				2.70	
Fallbrook*[l]	90	32	54.8	3.44	
Folsom City *b*[l]	82	34	56.2	4.06	
Fordyce Dam				14.05	108.0
Fort Bragg†	76	28	52.8	4.64	T.
Fort Ross				5.27	
Fort Tejon				0.40	
Fresno					T.
Georgetown†	71	22	45.0	11.28	30.0
Glendora				6.00	
Goshen*[b]	85	30	55.2	0.36	
Grass Valley				6.94	16.0
Greenville†	72	3	42.2	7.05	30.0
Guinda				1.82	2.5
Healdsburg*[l]	70	26	52.2	4.11	
Hollister	78	28	53.8	1.42	T.*
Hueneme				2.15	
Humboldt L. H.				6.81	
Hydesville †	74	25	51.2	4.77	8.0
Indio*[c]	95	40	63.8	0.00	
Iowa Hill*[l]	72	25	47.5	10.93	9.5
Isabella	82	30	53.7	1.93	11.0
Jackson	69	25	48.0	5.18	12.0
Jolon				2.61	2.5
Julian†	84	23	49.2	6.10	36.0
Keeler*[b]	81	31	57.2	T.	
Keene*[b]	75	22	49.5	2.47	14.0
Kennedy Gold Mine	74	28	51.1	4.80	8.0
Kernville				1.54	10.0
King City*[b]	88	32	56.7	1.73	
Kingsburg*[b]	85	30	56.2	1.15	
Kono Tayee	68	30	49.8	2.31	5.0
Lagrange*[b]	83	32	57.2	2.65	
Laporte*† [l]	58	10	36.6	16.20	73.0
Lemoore *a*[b]	83	32	56.9	1.08	
Lick Observatory†	66	18	43.4	3.83	21.0
Lime Kiln	86	33	59.0		
Lime Point L. H				3.21	
Lodi	81	30	55.3	2.92	
Los Alamos†				3.08	
Los Gatos *b*	74	33	53.5	3.66	T.
McMullin*[l]	84	32	55.0		
Malakoff Mine*[l]	71	21	46.4	10.20	21.5
Mammoth Tank*[b]	100	40	67.1	0.25	
Manzana	88	21	47.9	1.70	15.5
Mare Island L. H.				2.49	
Merced*[b]	82	38	57.0	2.10	
Mills College				2.02	2.0
Milton (near)*[l]	79	31	58.2	2.76	
Modesto*[b]	76	36	53.5	0.90	
Mohave*[b]	82	27	53.4	1.45	14.0
Mokelumne Hill*[b]		29	49.0	4.66	15.0
Monterey*[b]	72	40	55.0	2.20	
Mount Frazier†				3.12	50.0
Mount Glenwood*[l]	75	35	56.0	3.26	3.0
Mt. Lowe Observatory				4.10	6.0
Mutah Flat				4.79	23.0
Napa *b*	78	27	53.8	3.60	
Nevada City†	68	20	46.2	7.39	19.0
Newcastle *a*†	74	27	51.6	4.81	1.0
Newhall*[b]	91	28	55.5	4.04	
Nordhoff†	86	26	56.2	3.42	
Oakland *a*	73	33	54.7	2.64	
Ogilby*[b]	111	32	68.7	0.00	
Oleta*[l]	70	22	48.7	5.41	10.0
Orangevale†	76	29	54.6	4.07	
Orland*[b]	78	28	51.8	4.25	6.0
Ormonde†				7.50	22.0
Oroville *b*	80	30	57.6	4.19	
Palermo†	79	24	54.2	2.31	
Paso Robles *b*	74	26	52.0	3.77	
Peachland*[l]	71	28	51.8	3.85	1.0
Picacho	99	41	67.3	0.75	
Piedras Blancas L. H.				2.74	
Pigeon Point L. H.				1.53	
Pilot Creek				13.07	45.0
Placerville *b*	72	16	47.6	11.11	23.0
Point Ano Nuevo L. H.				0.95	
Point Arena L. H				3.65	
Point Bonita L. H.				4.43	
Point Conception L. H				0.72	
Point Fermin L. H				1.90	
Point George L. H.				3.03	
Point Hueneme L. H.				2.22	
Point Lobos	66	34	52.4	3.45	
Point Loma L. H.				2.00	
Point Montara L. H.				2.96	
Point Pinos L. H.				1.92	
Point Reyes L. H.				3.25	

TABLE II.—*Meteorological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
California—Cont'd.	°	°	°	*Ins.*	*Ins.*
Point Reyes L. H. (W.B.)	.....	.....	.....	.....	4.0
Point Sur L. H	.....	.....	.....	2.32	.....
Pomona (near)	90	31	57.8	4.39	0.5
Poway *[3]	89	34	51.8	4.73	
Quincy †	66	15	43.6	7.96	21.0
Ravenna *[3]	90	25	55.3	2.90	8.0
Redbluff	.....	.....	.....	.....	1.0
Redding *b* †	75	27	52.8	4.17	7.0
Reedley (near) *[1]	84	35	47.3	1.10	
Represa	74	32	54.7	4.46	
Riovista	77	28	53.9	1.42	.....
Robertsons Mills	.....	.....	.....	0.00	
Roe Island L. H	.....	.....	.....	2.10	
Roseville (near)	.....	.....	.....	3.55	
Rosewood	75	17	51.2	3.85	10.0
Sacramento *a*	83	32	57.0	3.00	T.
Salinas *[3]	70	37	52.7	1.50	
Salton *[3]	104	40	69.4	.....	
San Bernardino †	89	29	58.0	2.92	1.0
San Francisco	.....	.....	.....	.....	0.5
San Jacinto	88	26	54.8	3.70	1.5
San Jose *b*	81	26	55.6	2.22	
San Leandro *[1]	74	39	57.7	2.03	
San Luis L. H	.....	.....	.....	2.57	
San Luis Obispo (W.B.)	.....	.....	.....	.....	T.
San Mateo *[3]	74	39	58.0	.....	
San Miguel *[3]	84	31	55.7	3.11	
San Miguel Island †	76	37	56.0	2.25	
San Rafael †	.....	.....	.....	4.78	
Santa Ana *[3]	80	42	59.6	2.90	
Santa Barbara *a*	82	36	57.6	2.37	
Santa Barbara L. H	.....	.....	.....	2.12	
Santa Clara *a* *[3]	72	36	54.7	2.08	
Santa Cruz *b* †	81	29	55.0	3.69	.....
Santa Cruz L. H	.....	.....	.....	3.09	
Santa Maria	82	36	57.2	2.59	
Santa Monica *[3]	78	41	62.5	2.71	
Santa Paula *b* †	89	30	57.6	3.18	.....
Santa Rosa *[3]	77	32	54.3	3.53	
Saticoy	.....	.....	.....	3.08	
Shasta	.....	.....	.....	6.93	15.0
Shasta Springs †	66	12	41.0	6.20	30.0
Sneddens Ranch *[1]	78	— 4	39.0	5.02	24.0
S. E. Farallone L. H	.....	.....	.....	3.00	
Stanford University	74	31	54.2	2.13	
Stockton *a*	76	34	55.4	1.76	
Summerdale †	65	13	41.0	6.39	29.0
Susanville †	68	17	42.7	3.23	1.5
Sutter Creek *[3]	70	24	46.9	4.43	5.0
Tecarte Dam *[4]	86	28	47.6	4.41	
Tehama *[3]	78	33	53.8	2.35	3.0
Templeton *[3]	82	30	54.5	4.35	2.0
Trinidad L. H	.....	.....	.....	7.72	
Truckee *[3]	58	12	34.3	4.67	39.0
Tulare *b*	.....	.....	.....	0.83	
Tulare *c*	92	28	58.9	0.72	
Turlock *b* †	82	28	55.5	1.42	
Ukiah †	75	25	51.4	3.95	5.0
Upper Lake	77	25	50.7	2.39	4.0
Upper Mattole *[1]	78	32	52.7	8.03	5.5
Vacaville *a* *[1]	79	32	55.2	4.31	
Ventura †	83	34	55.6	2.16	
Volcano Springs *[3]	108	40	68.3	0.00	
Walnutcreek	79	32	56.4	2.65	2.0
Washington *[1]	80	18	47.6	7.90	21.2
Westpoint †	.....	.....	.....	4.55	13.5
Wheatland	76	29	53.6	2.37	
Williams *[3]	75	30	55.6	1.65	1.0
Willows *b* *[3]	75	32	57.2	2.06	
Wilmington *[3]	78	50	63.8	.....	
Wire Bridge *[3]	77	32	54.0	6.38	
Yerba Buena L. H	.....	.....	.....	2.00	
Yreka †	72	19	45.7	1.89	
Yuba City *[3]	73	36	57.0	2.21	T.
Engineers Quarters ‡	.....	.....	.....	4.21	26.0
Morses House ‡	.....	.....	.....	7.90	40.0
Grass Valley ‡	.....	.....	.....	4.92	33.1
Deep Creek ‡	.....	.....	.....	3.52	25.0
Holcomb Creek ‡	.....	.....	.....	3.24	26.5
Squirrel Inn ‡	.....	.....	.....	5.60	31.0
Green Valley ‡	.....	.....	.....	6.57	39.5
Tunnel No. 2 ‡	.....	.....	.....	3.24	23.5
Colorado.					
Alma † [f]	49	—20	21.6	3.30	.....
Arkins	.....	.....	.....	1.50	18.5
Boxelder	.....	.....	.....	3.24	29.0
Breckenridge †	54	—15	22.6	4.83	48.2
Byers *[1]	78	0	32.5	0.60	6.0
Canyon †	73	0	38.2	1.14	15.5
Castlerock †	68	— 5	32.7	1.80	18.0
Climax †	42	—12	15.7	9.70	97.0
Collbran	.....	.....	.....	0.79	7.0
Colorado Springs †	71	— 3	34.4	2.57	21.6
Cope †	78	— 9	36.4	1.08	10.7
Crook	80	— 9	34.2	1.50	15.0
Deertrail	.....	.....	.....	.....	11.0

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Colorado—Cont'd.	°	°	°	*Ins.*	*Ins.*
Delta †	83	9	42.4	0.02	0.2
Denver	.....	.....	.....	.....	19.9
Downing	79	4	40.8	1.10	11.0
Dumont *[1] *b*	62	0	33.6	2.48	18.0
Durango †	68	3	40.2	0.53	5.3
Estespark	68	—10	29.4	2.02	17.8
First View *[6]	76	8	41.9	0.50	5.0
Fleming	.....	.....	.....	2.00	20.0
Fort Collins †	76	— 7	34.0	1.73	18.5
Fox	.....	.....	.....	0.89	3.5
Garnett	.....	.....	.....	0.45	4.5
Gleneyrie †	70	0	34.4	2.38	23.5
Goldhill *[1]	65	1	30.5	3.78	37.2
Grand Junction †	73	17	44.4	0.27	2.0
Greeley †	76	1	34.1	0.93	9.5
Gulch †	56	— 4	29.6	1.60	16.0
Gunnison †	60	—18	25.2	0.25	2.5
Holly	.....	.....	.....	0.50	5.0
Holyoke *a*	.....	.....	.....	1.17	11.8
Hugo * † *b*	76	2	40.4	0.41	4.1
Hugo (near) †	73	— 5	33.2	1.25	12.5
Husted †	74	— 8	33.6	2.25	22.2
Jamestown	60	— 5	28.0	2.75	27.5
Kit Carson *[1]	76	10	38.8	0.40	4.0
Lake Moraine †	52	— 8	24.7	2.35	23.5
Laporte	.....	.....	.....	2.70	27.0
Las Animas †	84	4	39.0	0.50	3.0
Lay * † [1]	57	—16	25.6	1.05	8.5
Leadville (near) * † [1]	46	—10	22.8	3.90	39.0
Ler-y †	76	1	34.4	1.20	12.0
Longmont †	77	4	37.4	1.74	17.2
Longs Peak	56	— 8	27.2	3.17	30.0
Loveland	.....	.....	.....	1.78	20.0
Manhattan	.....	.....	.....	1.67	18.0
Meeker †	65	— 2	30.5	1.83	15.8
Millbrook †	67	—13	30.2	2.70	27.5
Minneapolis †	84	9	40.4	0.37	3.0
Montrose †	83	12	44.2	0.34	3.5
Moraine †	57	—12	28.4	2.87	31.0
Ouray †	63	6	34.4	2.80	28.0
Pagoda	65	—17	29.8	2.40	24.0
Paonia †	.....	.....	.....	0.30	3.0
Pinkbamton *[1]	52	3	28.5	1.87	.....
Pueblo	.....	.....	.....	.....	7.1
Redcliff	.....	.....	.....	0.56	5.6
Rico †	58	— 6	29.3	2.10	21.0
Riverbend *[3]	80	4	34.8	1.40	14.0
Rockyford †	84	— 2	39.6	0.41	2.0
Ruby †	.....	.....	.....	8.45	84.5
Saguache †	60	— 2	32.4	T.	T.
St. Cloud †	.....	.....	.....	1.90	19.0
San Luis †	74	6[m]	31.3[f]	1.24	3.5
Santa Clara * † [1]	67	0	29.7	3.60	36.0
Seibert †	.....	.....	.....	0.30	3.0
Smoky Hill Mine †	64	— 3	30.4	3.60	33.0
Stamford *[1]	56	— 4	27.0	1.45	14.5
Steamboat Springs	46	—13	23.0	0.80	8.0
Sulphur Springs	57	— 9	26.4	3.05	30.5
Surface Creek †	74	12	39.2	0.68	6.5
Thon †	75	— 4	36.3	0.62	6.0
T. S. Ranch †	73	15	41.1	0.07	1.0
Twin Lakes	.....	.....	.....	1.47	21.2
Vilas	.....	.....	.....	0.45	4.5
Wallet †	.....	.....	.....	1.20	12.0
Watkins *[1]	74	18	39.6	0.30	3.0
Wray †	81	7	36.3	0.66	7.5
Yuma	.....	.....	.....	1.25	11.5
Connecticut.					
Bridgeport	62	6	31.2	6.96	20.0
Canton †	57	— 2	28.3	5.55	16.0
Colchester	60	7	31.2	5.20	12.0
Falls Village	.....	.....	.....	5.59	20.0
Hartford *c*	60	6	33.0	.....	.....
Lake Konomoc	.....	.....	.....	5.57	.....
Middletown	63	2	31.5	5.31	14.0
New Haven	.....	.....	.....	.....	13.0
New London †	62	10	31.2	2.96	19.5
North Grosvenor Dale	60	7	30.6	6.64	.....
Norwalk	61	0	30.8	6.87	20.5
South Manchester	.....	.....	.....	4.52	.....
Storrs	57	6	29.1	4.86	12.0
Thompson *[1]	56	5	27.4	.....	.....
Voluntown †	61	5	32.4	5.49	18.0
Wallingford †	.....	.....	.....	3.93	11.0
Waterbury	59	2	31.4	5.99	12.5
West Simsbury	.....	.....	.....	5.35	15.0
Windsor	57	3	29.9	6.31	15.0
Delaware.					
Dover †	65	18	38.0	5.50	3.1
Milford	69	17	39.8	5.14	2.0
Millsboro	69	16	39.6	3.47	4.0
Newark	66	12	35.2	4.45	4.5
Seaford †	70	16	38.9	4.01	2.5
Wilmington †	74	16	37.8	5.90	6.5
District of Columbia.					
Dist'ing Reservoir *b*	66	17	39.0	2.73	.....

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Dist. of Col.—Cont'd.	°	°	°	*Ins.*	*Ins.*
Receiving Reservoir *b*	65	12	38.0	3.14	.....
Washington	.....	.....	.....	.....	7.7
West Washington	71	14	39.0	4.94	4.0
Florida.					
Amelia †	86	32	57.9	2.92	
Archer †	91	33	63.2	3.63	
Avonpark †	92	42	68.1	1.26	
Bartow †	89	37	65.0	1.56	
Brooksville †	85	35	63.2	1.58	
Clermont †	91	40	66.0	1.37	
Earnestville	93	35	65.4	2.05	
Eustis †	90	37	65.0	1.13	
Federal Point †	86	35	61.2	2.47	
Fort Meade †	87	29	63.6	0.90	
Frostproof * † [1]	89	41	57.0	0.93	
Grasmere †	87	35	64.3	1.63	
Hypoluxo * † [1]	85	50	69.6	3.13	
Kissimmee †	86	42	66.4	0.98	
Lake City †	88	35	62.9	3.67	
Lemon City †	87	45	69.7	2.14	
Macclenny	89	32	60.0	3.68	
Manatee †	89	37	63.6	0.55	
Merritts Island †	83	44	66.4	1.42	
Milton †	.....	.....	.....	10.57	
Mullet Key †	76	45	64.0	0.87	
Myers †	86	43	67.8	2.17	
New Smyrna †	84	38	61.8	1.30	
Oakhill *[1]	84	45	66.1	.....	
Ocala * † [1]	88	35	62.3	2.77	
Orange City †	90	38	64.0	1.27	
Orangepark	87	30	60.4	2.33	
Orlando †	90	39	66.4	1.39	
Plant City †	92	36	66.0	1.98	
St. Francis †	88	29	62.0	1.13	
St. Francis Barracks	81	39	59.1	3.10	
Tallahassee †	83	36	59.0	6.66	
Tarpon Springs †	84	37	63.0	1.40	
Georgia.					
Adairsville †	84	24	48.1	2.66	T.
Albany †	90	29	54.8	4.68	
Allentown	91	24	56.2	2.99	
Americus †	90	27	55.9	4.76	
Atlanta	.....	.....	.....	.....	0.1
Augusta	.....	.....	.....	.....	T.
Blakely * † [6]	88	30	57.6	5.61	
Brag †	92	24	56.2	1.72	
Brunswick	80	41	59.1	4.27	
Canton †	.....	.....	.....	3.01	T.
Clayton †	79	18	46.0	3.09	
Columbus	.....	.....	.....	3.94	
Covington	72[o]	25[o]	47.6[o]	2.95	0.2
Dahlonega †	79	21	48.3	2.91	T.
Diamond †	80	19	45.2	3.33	3.5
Dublin *b* †	.....	.....	.....	3.12	
Elberton	81	25	50.7	3.41	
Fleming †	87	26	55.9	3.32	
Fort Gaines †	86	28	55.6	5.26	
Gillsville †	81	24	49.8	2.11	
Hephzibah *[3]	82	30	53.1	.....	.....
Lagrange †	85	28	52.0	4.12	0.8
Leverett	84	23	50.4	2.30	0.8
Louisville †	90	23	53.2	2.25	
Lumpkin	87	31	55.4	4.14	
Macon †	.....	.....	.....	3.47	
Marietta †	81	23	48.2	3.44	3.0
Marshallville †	85	29	54.6	4.15	
Milledgeville †	85	26	53.5	3.00	
Millen †	90	26	55.6	2.69	
Monticello * † [1]	80	33	54.6	3.15	
Morgan †	87	28	55.2	5.54	
Point Peter *[1]	78	26	50.4	3.35	
Poulan †	88	27	56.2	4.85	
Quitman	85	29	57.7	2.58	
Ramsey †	83	23	49.4	2.50	T.
Resaca †	.....	.....	.....	3.08	T.
Reynolds	.....	.....	.....	3.82	
Rome †	84	26	49.6	3.22	T.
Talbotton †	83	27	52.9	3.45	
Thomasville †	85	30	58.2	5.35	
Toccoa †	81	24	47.7	2.06	T.
Washington †	82[o]	26[o]	50.6[o]	2.98	T.
Whitesburg †	.....	.....	.....	3.74	T.
Idaho.					
American Falls †	65	— 3	35.6	2.39	8.0
Atlanta †	50	— 3	25.6	4.32	38.0
Blackfoot †	67[o]	— 7	35.1[o]	1.95	4.5
Bliss †	69	6	39.4	1.91	.....
Boise Barracks †	69	19	40.7	2.41	3.2
Burnside	64	—15	28.6	1.35	4.0
Carriboo	49	4	26.0	4.66	42.0
Challis	67	—14	33.4	0.45	2.0
Chesterfield †	61	—13	26.9	2.03	4.0
Cœur d'Alene	64	4	36.6	.....	.....
Corral * † [1]	45	—21	19.4	2.18	19.0
Dairy †	65	5	34.8	1.46	.....
Downey †	64	— 9	32.2	1.30	4.5

TABLE II.—*Meteorological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Idaho—Cont'd.	°	°	°	*Ins.*	*Ins.*
Fort Lemhi†	65	−22	28.8	1.10	7.7
Fort Sherman†	61	3	35.6	1.00	4.1
Fraser†	61	−20	33.0	2.84	7.0
Grangeville	64	− 5	35.3	2.11	6.7
Idaho City†	60*	6	34.0*	4.11	26.4
Idaho Falls	.....	.....	.....	.....	17.6
Junction†	65	−33	21.4	0.50	5.0
Kootenai†	58	−12	34.1	0.80	6.0
Lake†	36	−22	14.2	2.00	30.0
Lewiston†	76	13	44.8	0.78	T.
Lost River†	.....	.....	.....	1.53	8.0
Martin†	55	−15	27.4	2.30	.....
Minidoka†	66	4	33.8	2.88	1.2
Moscow†	68	18	40.2	1.11	T.
Murray†	56	− 3	32.0	2.95	25.0
Nampa	70	14	41.0	1.30	.....
Oakley†	72	7	36.1	1.87	4.0
Paris†	64	− 4	28.8	1.62	.....
Payette†	80	12	45.2	0.86	0.6
Pollock†	71	3	43.4	1.02	4.0
Roseberry	55	− 5	27.1	1.50	8.0
Salubria†	68	1	40.1	1.46	6.7
Soldier†	44	−17	23.6	2.65	14.3
Swan Valley†	61	−10	28.8	2.49	9.5
Warren†	64	−29	27.2	2.33	.....
Illinois.					
Albion†	73	15	38.6	4.81	18.0
Alexander†	75	8	37.4	0.82	6.0
Ashton*†‖	70	2	30.9	1.33	4.9
Atlanta	.....	.....	.....	0.93	.....
Atwood *a*†‖	70	4	32.4	2.84	3.8
Atwood *b*	.....	.....	.....	0.98	.....
Aurora *a*	78	2	34.0	1.75	.....
Aurora *b*†	69	1	30.2	1.71	6.5
Beardstown†	.....	.....	.....	0.43	2.5
Bloomington†	74*	5*	38.1*	2.11	4.6
Bushnell†	75	10	36.2	0.43	3.0
Cairo	.....	.....	.....	.....	1.2
Cambridge	72	9	33.4	1.24	3.2
Carlinville†	76	13	37.6	1.51	7.0
Carrollton	70	14	36.1	1.45	6.4
Catlin†	65	8	35.5	0.73	4.8
Cazenovia*†‖	70	8	33.9	1.08	4.0
Charleston	68	10	35.4	1.85	8.5
Chemung*†	63	− 4	29.2	3.48	10.5
Chester†	.....	.....	.....	3.91	20.0
Chicago	.....	.....	.....	.....	8.9
Cisne*†‖	74	22	40.2	2.88	12.5
Clearcreek†	68	5	34.6	0.93	....
Coatsburg†	70*	11*	34.6*	0.94	7.0
Cobden†	70	14	41.4	3.72	5.4
Cordova†	.....	.....	.....	0.79	2.2
Decatur†	72	11	36.6	1.44	5.4
Dixon†	75	5	33.0	0.81	3.0
Duquoin*‖	70	18	41.2	3.30	4.0
East Peoria†	76	9	35.4	1.26	5.5
Effingham§	72	18	39.9	2.20	7.5
Fort Sheridan†	58	1	29.4	2.53	8.2
Frederick*§	74	12	37.6	0.95	3.0
Friendgrove†	.....	.....	.....	4.42	16.0
Galva†	74	6	33.5	0.79	4.3
Gilman†	68	8	34.3	0.80	5.0
Glenwood*†‖	68	3	29.0	0.43	3.0
Grafton†	.....	.....	.....	1.69	4.5
Greenville†	72	12	38.6	2.37	9.8
Griggsville†	73	10	38.0	0.56	2.7
Halliday*§	70*	20*	43.4*	4.33	6.0
Havana†	76	15	38.4	0.98	2.5
Herrins Prairie*‖	68	22	41.4	4.55	15.5
Hillsboro*†‖	72	16	39.6	1.23	9.0
Iron *†§	75	19	42.6	3.13	9.5
Joliet†	72	7	35.4	1.15	4.0
Jordans Grove†	72	17	40.8	3.69	18.3
Kankakee *a*†	63	9	31.8	0.53	.....
Kankakee *b*†§*	66	11	32.6	.....	.....
Keithsburg‖	74*	8	34.4	1.08	3.0
Kishwaukee	67	0	30.4	1.20	2.1
Knoxville *a*§	72	8	34.6	1.57	2.1
Knoxville *b*	73	3	33.0	1.02	5.6
Lagrange†	68	5	31.0	1.04	10.0
Laharpe*‖	73	8	34.0	1.18	4.8
Lanark*†‖	65	2	30.8	1.21	5.0
Lexington†	71	6	33.4	0.53	5.8
Loami	.....	.....	.....	1.27	2.8
Louisville†	68	13	38.6	2.75	13.7
McLeansboro*†§	.....	19	37.8	4.51	12.0
Martinsville†	71	14	36.5	1.90	10.5
Mascoutah*§	70	14	39.0	2.89	7.9
Mattoon*‖	58	19	38.8	1.13	3.5
Minonk*†‖	70	9	33.2	1.08	2.0
Monmouth†	74	8	34.6	0.68	4.9
Morrisonville†	73	12	37.3	1.25	4.5
Mount Carmel†	.....	.....	.....	5.49	28.0
Mount Pulaski	75	11	36.4	1.14	9.5
Mount Vernon	79	12	41.7	4.05	17.0
New Burnside†	70	15	41.8	2.86	.....
Illinois—Cont'd.					
Olney*a*‖	70	14	40.5	3.07	21.2
Oregon	68	2	30.5	1.70	6.0
Oswego*‖	68	0	30.0	1.71	5.2
Ottawa†	72	7	32.6	1.32	4.2
Palestine†	70	13	37.6	2.19	14.5
Paris	74	9	36.8	.....	7.5
Peoria *a*†	.....	.....	.....	1.44	.....
Peoria *b*	74	13	37.4	1.05	1.5
Philo†	73	7	34.4	0.77	3.5
Plumhill*†§	77	19	38.8	2.99	20.3
Rantoul*†‖	68	7	33.9	0.87	4.5
Reynolds	71	6	32.6	1.10	2.4
Riley†	64	− 3	28.6	1.85	6.5
Robinson*§	67	11	35.1	1.85	9.0
Rockford†	70	− 1	30.5	2.02	6.0
Rose Hill *†‖	72	14	36.7	2.93	18.0
Roundgrove†	72	.....	.....	1.83	.....
Rushville	72	11	36.3	0.78	2.4
St. Charles*†‖	64	3	31.7	2.46	8.5
St. John*‖	69	17	39.3	3.99	8.0
Scales Mound†	68	0	31.6	1.39	8.2
Springfield	.....	.....	.....	.....	4.6
Streator†	68	7	31.4	0.65	4.0
Sycamore*†‖	67	0	30.8	1.44	4.5
Tiskilwa*§	68	6	31.2	1.01	5.0
Tuscola*†‖	70	9	36.2	1.46	5.8
Walnut†	70	7	33.6	1.51	2.2
Warsaw†	.....	.....	.....	1.50	.....
Wheaton*§	.....	6	29.2	2.11	11.6
Winnebago†	66	2	30.4	1.38	6.0
Zion†	71	− 1	30.1	0.91	.....
Indiana.					
Anderson†	65	10	34.2	2.74	16.6
Angola*‖	65	0	31.3	3.12	9.0
Bloomington	70	14	38.9	2.10	13.0
Bluffton†	69	2	32.8	3.42	19.0
Butlerville†	75	10	37.1	4.37	16.7
Cambridge City†	68	6	33.9	3.13	18.6
Columbia City*‖	64	5	31.6	2.41	11.5
Columbus†	70	10	36.3	2.73	10.5
Connersville†	65	5	33.5	3.09	14.5
Edwardsville*†‖	68	14	39.6	4.73	17.5
Evansville†	70	15	40.4	3.51	4.8
Farmland†	63	2	33.8	2.89	25.7
Franklin*‖	69	14	35.4	3.04	15.5
Greencastle†	65	11	33.8	2.50	10.9
Hammond†	67	4	33.3	3.69	16.0
Huntington	65	4	31.7	3.02	17.0
Indianapolis	.....	.....	.....	.....	17.8
Jasper†	73	10	40.2	5.15	26.0
Jeffersonville	69	16	39.7	4.63	14.8
Kokomo†	66	9	34.7	2.17	10.5
Lafayette†	66	8	34.2	1.55	9.5
Logansport *b*	66	5	35.6	1.78	12.0
Madison†	72	13	39.4	4.26	21.0
Marengo*†‖	73	4	39.4	4.92	17.1
Marion†	66	4	34.1	2.83	14.0
Mauzy†	66	5	33.3	3.15	20.8
Mount Vernon†	77	18	42.5	3.46	3.0
Northfield †	63	9	33.8	2.38	10.8
Princeton*†‖	72	14	39.2	5.85	32.0
Rockville†	69	8	35.3	1.71	7.0
Rushville	.....	.....	.....	3.29	14.5
Scottsburg†	71	13	38.5	3.45	16.0
Seymour†	68	12	36.4	3.26	16.0
South Bend†	66	− 3	31.2	2.28	15.6
Sunman	68	8	34.2	3.87	19.0
Terre Haute†	70	16	38.1	2.19	7.1
Tipton†	72	3†	35.0*	2.46	14.4
Valparaiso†	67	3	30.8	2.45	14.5
Vevay	75	12	37.9	4.50	23.0
Vincennes†	72	11	36.7	3.81	13.0
Worthington†	68	12	38.0	2.45	13.7
Indian Territory.					
Eufaula†	.....	.....	.....	0.85	
Healdton†	89	26	51.0	1.89	
Kemp†	88	23	52.5	1.50	
Lehigh†	88	22	51.0	1.13	
Purcell	90	10	45.6	1.24	
South McAlester†	73	20	46.2	1.50	
Tahlequah†	82	19	46.6	1.23	.....
Tulsa†	.....	.....	.....	1.30	
Vinita†	78	21	45.8	2.45	.....
Iowa.					
Afton	73	1	32.7	2.34	12.0
Algona*‖	64	− 4	27.8	1.15	3.0
Alta *a*†	65	− 5	26.8	0.58	3.7
Amana†	67	4	31.2	0.57	2.0
Ames *c*	.....	.....	.....	1.12	4.8
Atlantic†	74	0	30.4	2.05	10.5
Audubon	73	− 3	29.6	2.03	10.5
Belknap	81	5	34.2	0.91	6.0
Belle Plaine	67	0	30.7	0.75	6.2
Bonaparte†	73	7	35.0	0.93	1.3
Carroll	72	− 4	29.2	1.79	8.0
Cedarfalls†	68	1	31.8	0.90	3.5
Iowa—Cont'd.					
Cedar Rapids†	76	7	33.7	0.50	4.0
Chariton	73	4	33.0	0.96	8.6
Charles City†	60	− 4	28.7	1.53	1.5
Clarinda†	72	2	30.2	2.27	15.2
Clinton	69	5	32.3	0.95	2.0
College Springs	74	10	36.0	1.92	.....
Corning†	74	3	33.6	1.99	10.5
Cresco†	61	− 7	26.2	1.07	1.5
Davenport	.....	.....	.....	.....	2.4
Decorah†	62	− 8	28.8	0.62	2.5
Delaware*§	64	3	28.6	0.75	3.2
Denison†	65	− 3	27.8	1.85	6.0
Des Moines	.....	.....	.....	.....	7.9
Dows	64	− 5	28.4	1.00	3.0
Dubuque	.....	.....	.....	.....	2.6
Elkader†	66	− 6	29.5	0.84	2.8
Emmetsburg	63	−10	25.6	1.15	0.8
Estherville	63	− 7	26.8	1.82	7.0
Fairfield†	73	5	32.8	0.85	1.5
Fayette†	63	− 3	29.2	1.45	2.7
Forest City	63	− 8	26.5	1.00	2.8
Fort Madison*†‖	74	13	38.8	1.52	5.0
Galva	69	− 5	29.2	0.55	3.1
Gardengrove	74	− 1	31.6	0.90	5.0
Glenwood†	72	2	33.8	1.76	12.8
Grand Meadow*‖	60	− 5	27.7	1.66	6.0
Greenfield†	73	− 2	31.4	2.06	9.9
Grinnell†	68	2	32.0	0.55	3.8
Grundy Center	67	− 2	29.8	0.28	1.5
Guthrie Center	73	− 1	30.8	1.77	10.5
Hampton	64	− 5	27.9	1.06	2.2
Hawkeye	.....	.....	.....	1.65	4.0
Hopeville†	73	1	32.5	1.09	5.6
Humboldt†	66	0	29.2	0.88	2.0
Independence†	65	1	30.0	0.60	2.4
Indianola†	73	7	32.6	0.54	8.7
Iowa City *a*†	72	6	33.6	0.92	3.5
Iowa City *b*	73	4	32.8	.....	.....
Iowa Falls†	64	− 6	28.8	0.56	1.8
Keokuk	.....	.....	.....	.....	2.9
Keosauqua†	74	11	35.4	0.16	3.0
Knoxville	74	3	33.0	0.44	4.0
Larrabee†	66	− 2	27.4	0.47	0.2
Leclaire†	.....	.....	.....	0.95	.....
Lemars	72	− 1	32.8	0.46	1.2
Lenox*‖	72	5	33.0	2.37	11.7
Logan†	70	0	30.9	0.60	2.4
Madrid	62	− 5	31.1	1.07	5.5
Malvern*‖	75	2	32.2	2.54	10.5
Maple Valley	.....	.....	.....	0.60	4.0
Marshall†	68*	0*	29.2*	0.50	5.0
Mason City†	64	− 6†	27.6*	1.92	1.7
Maxon*‖	70	6	33.2	1.08	9.2
Mechanicsville	68	6	31.4	0.60	4.9
Millman	.....	.....	.....	1.13	7.5
Monticello*†‖	63	− 2	27.6	0.53	1.4
Mountayr†	76	1	33.5	1.47	9.0
Mount Pleasant*‖	71	10	34.5	1.52	2.5
Mount Vernon*‖	66	4	31.6	.....	.....
Newton†	70	0	32.0	0.62	5.4
North McGregor†	.....	.....	.....	0.59	3.0
Ogden	71	− 2	31.2	1.00	6.5
Osage*†§	.....	− 4	25.8	1.13	2.0
Oskaloosa†	74	3	32.9	0.77	6.2
Ottumwa	75	5	33.8	3.07	4.0
Ovid†	74	2	33.3	1.27	8.5
Panama†	72	− 1	31.0	1.01	6.5
Portsmouth	63*	0*	29.1*	0.96	9.6
Primghar	65	− 7	27.2	0.61	1.5
Reinbeck	.....	.....	.....	0.40	2.5
Rock Rapids	62	−12	25.4	1.55	8.5
Sac City†	68	− 3	28.2	1.50	4.0
Seymour†	75	3	34.4	1.00	10.0
Sibley	63	−11	26.2	0.92	2.8
Sidney	70	6	32.8	3.99	19.5
Sigourney	72	2	32.4	0.76	6.0
Sioux City	.....	.....	.....	.....	5.1
Spencer	60*	− 6‡	26.0*	1.35	1.6
Spirit Lake†	66	− 8	25.6	0.72	0.2
Toledo	65	0	31.0	0.36	3.0
Villisca†	76	3	31.4	2.21	16.5
Vinton*‖	66	3	31.5	0.50	3.5
Washington†	71	5	32.5	0.83	.....
Waterloo	64	0	30.3	0.54	2.2
Waukee	72	1	33.4	1.20	4.0
Waverly	64	− 1	29.8	0.42	1.3
Westbend*†‖	60	− 7	26.2	1.27	4.0
Wilton Junction†	71	6	32.1	1.37	3.0
Winterset†	73	− 1	30.8	1.20	12.0
Kansas.					
Abilene†	80	11	38.7	0.70	3.0
Achilles*§	82	12*	29.4*	0.72	7.2
Altoona*†§	80	18	38.4	1.81	2.5
Assaria*§	84	16	39.8	0.64	4.0
Atchison†	77	8	37.2	0.82	6.0
Augusta	80	15	41.8	1.03	3.5

TABLE II.—*Meteorological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Kansas—Cont'd.	°	°	°	*Ins.*	*Ins.*
Baker	76	7	36.8	0.63	1.4
Beloit†	86	4	34.6	0.66	6.5
Blaine	77	7	35.4	0.88	4.2
Burlington†	86	11	42.1	0.97	4.5
Campbell	76	2	34.6	1.05	7.8
Colby†	81	8	35.7	0.48	.....
Coldwater†	86	11	41.4	0.20	1.0
Collyer*[b]	.....	.....	.....	0.35	3.5
Columbus†	79	14	41.4	1.40	3.4
Concordia	.....	.....	.....	.....	10.0
Coolidge†	83	8	40.8	0.20	2.0
Cunningham†	84	12	39.8	0.33	T.
Dodge City	.....	.....	.....	.....	2.4
Downs	.....	.....	.....	1.14	12.0
Dresden*†[1]	78	12	35.4	0.90	8.0
Effingham	80	6	38.5	1.44	4.2
Eldorado†	78	14	41.8	3.60	.....
Elgin*[1]	80	18	42.0	1.35	3.0
Ellinwood*[3]	87	14	34.4	0.57	3.5
Emporia†	75	15	40.6	0.65	5.0
Englewood†	90	15	42.0	0.11	0.2
Eureka†	.....	.....	.....	0.94	T.
Eureka Ranch†	90	2	36.6	0.55	5.0
Fort Riley†	78	10	38.4	0.33	1.2
Fort Scott	.....	.....	.....	0.72	5.0
Frankfort	79	7	39.0	1.10	8.5
Garden City	87	9	41.0	0.06	0.5
Garfield	.....	.....	.....	0.14	0.4
Girard*[1]	78	15	40.2	1.57	3.0
Goodland†	79[e]	—5[e]	36.4[e]	0.65	6.5
Gove*†[1]	79	10	35.8	0.45	4.5
Grainfield*[6]	80	10	34.0	0.20	2.0
Greensburg†	87[e]	11[e]	41.8[e]	T.	T.
Grenola*[1]	78[e]	16[b]	40.7[e]	0.90	2.0
Halstead	74	12	37.1	1.16	3.5
Hays†	90	14	39.3	0.45	4.5
Horton†	75	9	37.0	0.68	3.0
Hutchinson†	82	18	41.8	1.15	4.5
Independence†	79	17	43.1	1.84	1.8
Jaqua†	82	5[d]	37.3[e]	0.63	6.5
Lawrence	76	10	39.2	0.62	2.1
Lebo†	80	10	40.8	0.98	2.0
Lyons	84	13	42.4	0.72	.....
Macksville†	95	15	39.0	T.	T.
McPherson†	77	10	36.4	0.51	0.2
Manhattan*b*	81	8	38.5	0.87	4.6
Manhattan*c*	.....	.....	.....	0.85	5.0
Marion†	78	14	39.1	1.05	3.0
Meade†	88	14	46.0	0.05	0.5
Medicine Lodge†	85	19	42.2	0.78	1.5
Minneapolis†	82	9	37.2	0.61	2.2
Morantown†	78	12	40.8	1.16	3.5
Morland	85	5	35.7	0.62	6.2
Morton†	87	8	42.8	0.10	1.0
Mounthope*[1]	79	18	41.5	1.26	4.0
Ness City†	87	10	40.0	0.38	2.8
New England Ranch†	83[e]	10[e]	35.8[e]	0.06	1.0
Norton	84	10	32.1	0.70	7.0
Norwich*[1]	80	14	41.4	1.62	2.5
Oberlin†	.....	.....	.....	0.90	9.0
Olathe†	76	9	39.8	1.90	3.0
Oswego†	84	20	44.4	1.31	4.0
Ottawa†	.....	11	.....	1.19	3.0
Paola†	79	9	40.2	0.60	1.0
Phillipsburg	70	4	34.0	1.00	10.0
Pleasant Dale†	90	7	36.9	0.85	4.0
Pratt†	83	17	39.6	0.57	.....
Rome*†[1]	80	19	41.9	1.04	1.0
Russell†	90	8	39.6	0.64	6.5
Salina†	82	11	37.7	0.87	2.8
Scott City†	83	9	38.8	0.58	5.6
Sedan†	80	18	43.8	1.55	2.3
Sharon Springs*[1]	85	14	37.7	0.75	7.5
Topeka	.....	.....	.....	.....	2.6
Tribune†	.....	.....	.....	0.50	.....
Ulysses†	88	5	39.8	0.20	2.0
Wakefield*[1]	80	10	38.4	1.19	2.0
Wallace*[1]	80	12	40.2	0.32	7.2
Wamego*[1]	78	12	38.1	0.65	4.2
Wellington*[1]	79	21	44.0	1.06	T.
Wichita	.....	.....	.....	.....	6.9
Winfield*[5]	78	18	41.0	1.17	0.5
Winona*[5]	80	12	39.8	0.35	3.5
Yates Center†	79	11	40.7	1.04	5.0
Kentucky.					
Alpha†	78	18	44.0	8.69	1.0
Anchorage	70	14	38.6	4.62	13.0
Ashland*[1]	69	14	36.2	.....	15.0
Blandville†	75	15	41.6	5.10	1.8
Bowling Green*a*†[1]	76	16	40.5	7.28	0.5
Bowling Green*b*†	76	18	47.2	6.92	1.0
Burnside†	.....	.....	.....	7.80	.....
Caddo†	72	9	37.2	4.13	0.3
Canton*†[1]	72	19	44.8	6.94	T.
Carrollton†	66	14	38.1	3.94	12.5
Catlettsburg†	.....	.....	.....	4.90	17.0

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Kentucky—Cont'd.	°	°	°	*Ins.*	*Ins.*
Earlington	67	20	42.2	4.69	1.5
Edmonton†	75	18	42.8	7.56	1.5
Eubank*	70	14	41.7	8.09	4.0
Falmouth†	.....	.....	.....	4.18	10.0
Fords Ferry†	71	15	42.4	3.68	2.0
Frankfort†	69	15	40.2	6.35	10.0
Franklin*†[1]	75	24	44.5	9.66	1.0
Georgetown	67	14	39.0	.....	.....
Greendale*[1]	67	13	38.1	8.42	16.4
Greensburg*†[1]	70	17	41.6	6.90	0.8
Harrods Creek†	70	16	42.0	3.95	.....
Leitchfield†	73	9	39.3	5.47	4.2
Lexington	.....	.....	.....	.....	16.3
Louisa†*a*	73	13	38.2	4.82	8.0
Louisa*b*†[1]	74	20	42.6	.....	8.0
Louisville	.....	.....	.....	.....	14.0
Marrowbone†	80	15	42.0	8.81	2.5
Maysville*†[1]	70	15	39.4	.....	.....
Middlesboro	80	14	41.8	9.74	0.5
Mount Sterling†	67	12	37.6	5.96	.....
Owenton†	68	15	37.6	5.11	18.2
Paducah*a*†	.....	.....	.....	4.88	1.0
Paducah*b*†	72	20	44.4	4.91	.....
Pleasure Ridge Park†	70	13	38.9	4.40	18.6
Princeton†	72	17	42.0	.....	.....
Pryorsburg†	80	17	45.8	7.41	.....
Richmond	68	10	41.6	5.70	12.0
Russellville†	75	17	44.2	7.95	0.5
St. John	70	15	39.5	4.92	4.5
Sandyhook†	71	8	39.1	6.69	12.0
Shelby City*[1]	77	17	40.9	6.06	4.0
Shelbyville†	69	13	38.8	4.03	11.8
Southfork†[2]	.....	.....	40.7	6.66	7.0
Springfield†	67[e]	14[e]	39.6[e]	5.41	20.4
Williamsburg†	.....	.....	.....	9.90	.....
Louisiana.					
Abbeville	80	32	60.4	4.45	
Alexandria†	84	29	58.2	3.64	
Amite†	86	22	58.2	8.01	
Bastrop†	87	26	55.6	4.31	
Baton Rouge†	85	34	58.6	4.55	
Calhoun†	86	27	54.4	4.64	
Cameron†	81	.....	.....	4.31	
Cheneyville†	88	30	56.6	3.54	
Coushatta*b*†	83	27	56.2	4.06	
Davis	82	23	54.2	4.16	
Donaldsonville†	85	39	60.8	4.25	
Elm Hall	86	30	59.3	.....	
Emilie†	80	34	60.1	4.14	
Farmerville	82	25	52.2	4.85	
Franklin†	81	29	60.2	2.81	
Grand Coteau	80	36	61.9	4.85	
Hammond†	82	29	58.8	6.08	
Houma	85	34	62.4	4.50	
Jeanerette†	82	31	61.9	3.26	
Lafayette†	80	30	60.4	4.59	
Lake Charles†	80	37	61.6	4.17	
Lake Providence	.....	32	.....	4.52	T.
Liberty Hill	90	24	56.8	4.98	
Maurepas	88	29	59.8	4.14	
Melville†	84	31	59.6	9.00	
Monroe†	80	29	55.6	4.51	
Natchitoches	81	27	56.2	2.98	
New Iberia	78	33	60.1	3.50	
Oakridge†	84	26	55.5	5.27	
Oberlin	81	29	56.6	5.60	
Opelousas†	84	29	58.0	5.15	
Oxford†	85	25	56.6	4.05	
Palmcourtville†	86	33	62.0	3.39	
Plain Dealing†	83	27	53.8	4.96	
Rayne†	84	30	58.7	6.39	
Ruston†	83[e]	28[e]	57.2[e]	4.63	
Schriever†	85	27	58.4	3.11	
Shellbeach	.....	36	.....	5.63	
Southern University†	78	37	59.5	4.75	
Sugar Ex. Station†	82	37	60.3	6.13	
Sugartown†	82	32	60.0	4.82	
Thibodeaux	.....	.....	.....	2.07	
Venice†	84	34	64.6	2.25	
Wallace	84	36	61.9	4.64	
West End	.....	.....	.....	2.60	
White Sulphur Springs†	83	28	56.6	4.43	
Maine.					
Bar Harbor	52	4	29.3	6.32	23.5
Belfast*[6]	47	8	28.4	7.30	30.0
Cornish*[1]	57	2	25.8	9.74	43.0
Eastport	.....	.....	.....	.....	13.1
Fairfield	54	—4	25.8	5.62	.....
Farmington†	51	—6	27.3	10.83	39.5
Flagstaff	47	—25	19.2	6.97	34.0
Fort Fairfield†	49	.....	.....	4.86	29.2
Gardiner	52	—15	27.3	7.19	30.5
Indian Stream	44	—16	21.1	7.20	37.0
Kineo†	42	— 8	20.5	4.49	25.8
Lewiston	54	— 4	27.8	10.10	29.2
North Bridgton	50	— 9	25.4	10.70	36.2

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Maine—Cont'd.	°	°	°	*Ins.*	*Ins.*
Petit Menan*[1]	40	15	27.2	.....	.....
Portland	.....	.....	.....	.....	29.1
West Jonesport*[1]	43	4	27.0	.....	.....
Winslow	55	— 5	27.4	6.24	16.0
Maryland.					
Annapolis	67	20	38.5	4.53	.....
Bachmans Valley	63	— 3	33.4	6.18	18.0
Baltimore	.....	.....	.....	.....	13.8
Boettcherville*[1]	68	— 6	33.4	3.90	29.0
Burkittsville	68	9	37.1	3.20	15.0
Cambridge†	67	21	41.4	3.92	1.5
Charlotte Hall†	70	13	39.2	3.82	2.0
Cherryfields†[2]	.....	.....	39.0	2.80	0.5
Chestertown	67	16	37.4	4.91	4.0
Collegepark	69[c]	10[d]	37.0[c]	4.61	4.0
Cumberland*b*	68	5	39.4	3.59	27.5
Darlington†	65	8	35.2	4.86	8.5
Deerpark	60	—13	28.6	4.63	40.0
Denton†	68	15	38.0	5.99	2.0
Easton†	69	18	39.0	4.34	1.5
Ellicott City	60	18	38.4	3.33	.....
Fallston*[1]	64	10	35.2	5.07	11.0
Flintstone	67	—12	33.8	3.83	24.8
Frederick*a*	67	0	35.0	4.04	16.3
Frederick*b*	68	6	36.4	.....	.....
Grantsville	62	— 1	29.4	5.12	41.0
Greatfalls*[5]	63	12	37.4	3.20	.....
Greenspring Furnace	70	— 1	34.8	2.36	20.0
Hagerstown†	69	1	35.2	5.40	22.0
Hancock	71	— 2	37.1	4.50	16.0
Jewell†	69	11	38.7	4.31	1.0
Johns Hopkins Hospital	70	14	36.8	.....	.....
Laurel	72	7	38.5	2.60	6.0
McDonogh†	64	5	36.0	.....	.....
Mardela Springs†	69	16	39.0	3.09	1.5
Mt. St. Marys College	66	8	35.0	5.75	24.0
New Market	67	5	35.9	5.91	12.0
Oakland†	61	—10	29.8	5.64	48.0
Pocomoke City	72	20	43.7	2.29	1.0
Princess Anne	71	16	39.7	2.18	1.0
Sharpsburg	66	— 2	35.0	3.82	17.5
Solomons†	71	20	40.1	2.63	1.0
Sunnyside	64	2	36.4	6.80	48.5
Van Bibber	68	9	35.0	5.15	.....
Western Port	.....	.....	.....	3.32	25.7
Westminster	71	12	37.8	4.60	18.1
Woodstock	67	— 4	36.1	6.12	10.0
Massachusetts.					
Adams	60	4	28.2	.....	24.0
Amherst	56	— 2	29.5	6.52	15.5
Ashland	.....	.....	.....	6.10	.....
Attleboro	.....	.....	.....	4.75	.....
Bedford	62	5	30.8	5.63	15.0
Beverly Farms	57	6	30.1	7.01	20.0
Bluehill (summit)	60	7	28.9	5.95	23.0
Bluehill (valley)	61	6	30.7	6.09	.....
Boston*a*	.....	.....	.....	4.92	.....
Boston (W.B.)	.....	.....	.....	.....	14.5
Brockton*a*	61	8	31.4	5.68	18.8
Brockton*b*	.....	.....	.....	4.68	.....
Brockton*c*	.....	.....	.....	5.68	.....
Cambridge*a*	64	7	31.7	6.27	.....
Cambridge*b*	68	12	30.2	4.37	.....
Chestnut Hill	66	7	32.0	5.53	17.0
Clinton	.....	.....	.....	3.97	.....
Cohasset	.....	.....	.....	5.66	10 7
Concord†	62	5	29.5	5.19	17.0
Dudley†	55[b]	0	30.9	4.60	12.0
East Templeton*[1]	54	8	27.1	6.15	21.5
Egg Rock, Nahant	55	10	28.0	.....	.....
Fallriver	61	14	32.4	5.64	18.0
Fitchburg*a*[1]	54	9	27.9	5.81	15.0
Fitchburg*b*	58	4	28.6	5.32	19.8
Groton	60	5	28.7	5.85	20.8
Hadley	58	— 5	28.1	.....	.....
Hingham	.....	.....	.....	6.47	20.5
Hobbs Brook	.....	.....	.....	3.58	14.0
Hyannis*†[1]	63	13	34.2	6.08	17.0
Hydepark*[6]	.....	10	29.7	.....	26.5
Lake Cochituate	.....	.....	.....	5.86	.....
Lawrence	60	8	30.1	5.36	11.5
Leeds	56	— 7	28.0	11.45	18.5
Leicester Hill	55	4	26.9	6.25	5.0
Leominster	.....	.....	.....	6.16	14.8
Long Plain*[6]	61	14	31.3	5.86	8.0
Lowell*a*	59	8	30.0	5.68	.....
Lowell*b*	64	3	28.9	.....	.....
Lowell*c*	64	8	31.2	.....	.....
Ludlow Center	54	— 3	26.2	5.23	15.0
Lynn*a*	61	8	30.4	4.97	.....
Lynn*b*	64	10	31.8	.....	9.5
Mansfield*[1]	60	6	30.5	5.16	18.8
Middleboro	61	6	30.4	5.39	16.5
Milton	63	7	32.0	4.88	13.0
Monroe	48	— 8	22.0	8.44	41.0
Monson	58	3	30.2	5.32	16.0

TABLE II.—*Meteorological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Massachusetts—Con'd.	°	°	°	*Ins.*	*Ins.*
Mount Nonotuck	.....	.....	.....	7.08	20.0
Mount Wachusett	.....	.....	.....	5.98	19.5
Mystic Lake	.....	.....	.....	5.19	.....
Mystic Station	.....	.....	.....	5.12	.....
Nantucket	.....	.....	.....	.....	16.4
Natick *[1]	60	7	29.1	7.91	.....
New Bedford *a*	62	10	30.9	5.97	.....
New Bedford *b*	62	7	31.9	5.82	19.0
North Billerica	60	8	29.8	4.94	24.0
Pittsfield	48	2	24.7	6.63	.....
Plymouth *[1]	62	13	33.1	5.81	20.0
Princeton	.....	.....	.....	8.60	17.5
Provincetown	56	16	31.8	.....	12.5
Quinapoxet	.....	.....	.....	5.50	12.8
Roberts Dam	.....	.....	.....	5.47	11.2
Roxbury	63	11	32.3	5.66	21.5
Salem	.....	.....	.....	4.49	17.5
Salisbury	.....	.....	.....	6.12	12.0
Somerset *[1]	64	4	33.1	5.22	23.0
South Clinton	.....	.....	.....	4.44	11.2
Springfield Armory	58	6	28.7	6.78	19.5
Sterling	.....	.....	.....	6.22	11.9
Taunton *b*	62	7	31.9	6.44	20.0
Taunton *c*	60	6	31.4	5.79	.....
Turners Falls	55	4	29.1	7.66	.....
Vineyard Haven	.....	.....	.....	.....	15.7
Wakefield †	64	5	31.0	5.42	17.5
Waltham	.....	.....	.....	6.29	.....
Webster	.....	.....	.....	6.69	14.0
Westboro †	60	4	31.4	6.13	13.8
Williamstown *[1]	59	10	26.0	3.10	18.5
Winchendon	.....	.....	.....	6.63	26.5
Winchester	.....	.....	.....	4.39	.....
Woods Hole	.....	.....	.....	.....	14.3
Worcester *a*	58	11	28.6	7.25	14.0
Worcester *b*	57	10	29.4	6.90	18.0
Michigan.					
Adrian	65	1	29.7	1.48	7.3
Allegan	64	— 2	29.6	1.47	6.0
Alma	56	— 4	26.4	1.23	3.0
Alpena	.....	.....	.....	.....	1.1
Ann Arbor	60	2	28.3	0.97	7.8
Arbela	54	0	26.6	1.49	4.0
Ball Mountain	55	— 2	25.2	1.59	7.9
Baraga	50	—11	19.1	0.81	10.3
Battlecreek	65	0	29.8	1.39	6.6
Benton Harbor	60	8	31.4	2.14	2.5
Berlin *[1]	62	0	26.0	1.43	9.3
Berrien Springs	67	1	30.8	1.72	11.8
Birmingham	69	3	27.6	1.45	7.0
Boon	53	—19	20.2	2.28	.....
Bronson	61	0	29.4	1.35	5.2
Calumet	44	— 4	19.2	0.78	6.0
Charlevoix	48	1	24.6	1.40	4.0
Cheboygan	48	—10	20.3	0.76	6.8
Clinton	63	0	29.2	1.70	6.8
Detroit	.....	.....	.....	.....	10.5
Fairview	.....	0	.....	2.16	4.4
Fitchburg	58	— 1	29.2	2.17	10.0
Flint	58	— 5	25.8	0.36	4.2
Gladwin	54	— 1	25.4	0.95	2.0
Grand Haven	.....	.....	.....	.....	5.6
Grand Rapids *a*	69	2	28.4	1.40	2.0
Grand Rapids *b*	64	3	28.8	1.45	2.0
Grape	62	4	29.8	1.39	8.8
Grayling	50	—13	18.8	0.90	3.5
Hanover	62	— 5	28.3	1.53	5.8
Harbor Springs	44	—11	21.0	.....	2.0
Harrison	59	— 4	24.2	1.17	4.8
Harrisville	52	— 3	23.2	0.43	1.7
Hart	60	— 2	28.8	1.25	3.0
Hastings	62	— 1	28.6	1.97	5.9
Hayes	52	5	27.2	.....	.....
Hesperia	54	— 4	25.4	0.95	7.5
Highland Station	.....	.....	.....	1.54	.....
Holland *[2]	62	7	36.5	.....	.....
Howell	60	— 1	27.8	1.55	5.0
Iron River	51	—19	17.4	1.72	.....
Ivan	50	— 9	22.7	1.25	8.5
Jeddo	59	0	25.1	1.16	4.8
Lake City	58	— 8	21.5	.....	.....
Lansing	61	0	26.8	1.15	4.8
Lathrop	51	—17	17.0	0.48	3.4
Lewiston	49	— 6	22.4	0.48	.....
Madison	62	1	29.3	1.68	8.0
Manistique	45	— 4	20.2	0.86	3.0
Marquette	.....	.....	.....	.....	10.9
Mayville	55*	10*	28.5*	1.73	6.0
Middle Island *[10]	48	5	25.6	.....	.....
Mottville	69	— 8	31.0	1.80	6.1
Mount Pleasant	56	— 2	26.4	2.30	5.0
North Marshall	58	— 4	27.8	1.17	3.0
Northport	47	4	25.9	1.21	10.0
Old Mission	47	0	26.2	0.99	5.6
Olivet	65	0	29.2	2.45	4.5
Ovid	56	— 3	26.7	1.28	4.0

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Michigan—Cont'd.	°	°	°	*Ins.*	*Ins.*
Owosso	58	— 5	26.4	1.19	7.8
Parkville	.....	.....	.....	1.88	10.0
Pontiac	60	1	26.9	.....	.....
Port Huron	.....	.....	.....	.....	5.1
Powers	46	— 7	22.2	.....	.....
Rockland	55	— 5	20.4	0.40	T.
Rogers City	50[4]	— 1[4]	21.9[4]	1.15	.....
Romeo	60	0	27.4	1.04	5.0
St. Ignace	48	—11	19.9	0.80	3.0
St. Johns	62	— 8	27.6	0.92	4.1
Sandbeach *a*	55	2	26.2	.....	.....
Saranac	62	— 3	27.6	1.10	5.5
Sault Ste Marie	.....	.....	.....	.....	3.2
Somerset	61	0	27.8	1.40	9.0
South Haven	64	4	28.7	1.80	7.0
Stanton	56	— 5	26.4	1.41	3.5
Thornville	58	2	28.0	0.62	4.5
Thunder Bay Island *[10]	46	6	24.7	.....	.....
Vandalia	69	— 1	32.0	1.59	9.3
Ypsilanti	62	— 2	27.6	1.76	8.4
Minnesota.					
Ada †	48	—35	15.4	1.29	15.0
Albert Lea †	59	— 8	25.6	1.82	.....
Alexandria *a* †	.....	.....	.....	2.01	13.8
Beardsley †	59	—26	18.6	1.68	6.3
Belleplaine *[1]	59	—12	21.6	1.25	.....
Bermidji †	.....	.....	.....	1.60	11.0
Bird Island	58	—14	23.4	1.91	10.5
Blooming Prairie †	60	—10	25.9	1.20	2.0
Bonniwell †	51	—15	24.0	2.86	11.5
Breese †	43	—34	13.2	1.31	13.9
Caledonia †	59	—10	26.2	1.19	5.0
Cambridge †	57	— 9	23.2	1.37	3.5
Camden †	58	—12	23.2	2.95	22.5
Campbell	52	—36	15.1	1.80	18.0
Collegeville	59	— 8	26.0	0.73	8.0
Crookston †	47	—30	15.2	2.45	19.5
Dawson *[1]	51	—23	18.8	4.07	15.9
Detroit City †	60	—33	17.7	0.82	.....
Duluth	.....	.....	.....	.....	12.7
Farmington †	59	—14	26.6	3.74	17.0
Fergus Falls †	50	—27	17.5	1.98	11.9
Glencoe †	58	—13	25.9	2.11	.....
Glenwood †	54	—23	19.5	2.23	12.5
Grand Meadow †	58	—12	24.1	1.30	3.8
Grand Portage †	49	—13	17.1	2.25	.....
Hutchinson †	58	—13	23.6	2.10	17.0
Koochiching †	54	—37	12.2	2.13	26.5
Lake Winnibigoshish *[1]	46	—22	18.2	0.90	11.7
Lambert †	.....	—30	.....	2.31	18.6
Lawrence †	55	—14	20.6	1.27	.....
Leech Lake [1]	52*	—35	16.2	1.02	10.7
Lesueur *[1]	60	0	27.2	.....	7.7
Long Prairie †	52	—22	19.8	1.71	6.0
Lutsen †	45	—18	18.5	1.50	.....
Luverne †	58	— 8	24.8	1.16	5.8
Mapleplain	57	—12	24.4	4.19	19.3
Maplewood *[1]	58	— 8	24.3	0.56	5.6
Mazeppa [1]	46*	—30	23.1	1.20	8.0
Milan †	57	—34	19.5	4.21	25.8
Minneapolis *a* †	59	—11	24.5	3.02	11.8
Minneapolis *b* [6]	57*	—11	24.6	3.14	14.1
Minneapolis (W. B.)	.....	.....	.....	.....	8.6
Minnesota City †	62	—12	28.1	1.05	3.5
Montevideo †	55	—19	20.8	3.94	19.0
Moorhead	.....	.....	.....	.....	12.0
Morris †	54	—26	18.4	1.98	12.5
Mount Iron †	45	—30	17.9	1.85	14.7
New London	59	—18	21.2	3.98	15.0
New Richland *[1]	60	— 6	25.5	.....	.....
New Ulm †	64	— 9	26.4	1.91	2.2
Park Rapids †	50	—34	17.0	1.62	9.3
Pine River *[1]	52	—19	19.9	2.43	15.9
Pleasant Mounds †	62	— 9	27.0	1.51	2.0
Pokegama Falls [1]	48*	—30	15.2	1.40	7.0
Redlake †	54	—26	15.8	3.15	13.3
Red Wing †	.....	.....	.....	0.30	.....
Reeds	.....	.....	.....	0.29	0.4
Rolling Green †	57	— 7	25.0	1.80	2.0
Roseau	49	—31	11.0	1.34	11.3
St. Charles †	62	—23	24.5	1.48	6.0
St. Cloud	52	—12	21.8	3.05	2.8
St. Olaf	48	—15	18.3	1.75	15.5
St. Paul	.....	.....	.....	.....	12.6
St. Peter †	56	— 5	25.1	2.72	11.0
Sandy Lake Dam [1]	49*	—21	19.3	2.19	18.5
Sauk Center	54	—20	20.0	2.66	19.0
Shakopee [6]	57*	—14	26.2	2.70	5.7
Tower †	48	—27	15.2	1.35	13.0
Two Harbors †	51	— 8	22.2	3.20	19.5
Wabasha *[1]	63	— 6	26.8	1.83	0.2
Wilmar †	58	—15	21.8	2.02	7.3
Winona	57	— 4	26.1	1.35	4.6
Worthington	58	— 8	22.6	2.16	4.1
Zumbrota [1]	58*	—23	24.9	.. ....	.....

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Mississippi.	°	°	°	*Ins.*	*Ins.*
Aberdeen	82	20	53.1	5.86	T.
Agricultural College	84	26	51.4	4.52	3.0
Austin †	82	27	52.6	5.86	1.5
Batesville †	82	36	50.6	8.01	.....
Bay St. Louis †	79	37	60.0	.....	.....
Booneville † *	81	24	48.5	.....	T.
Briers †	84	38	57.3	4.69	.....
Brookhaven †	86	25	57.3	6.28	.....
Canton †	.....	.....	.....	2.93	T.
Columbus *a* †	.....	.....	.....	5.14	.....
Columbus *b* † *	72	25	47.8	4.32	.....
Crystal Springs †	87	28	56.8	3.93	.....
Edwards	87	28	57.2	3.20	.....
Enterprise *c*	88	25	54.7	5.05	.....
Fayette †	85	27	57.1	3.50	.....
French Camps †	85	19	50.0	4.60	2.5
Fulton †	86	22	50.0	7.21	2.5
Greenville *a*	83	27	52.4	7.77	2.5
Greenville *b* †	74	30	49.6	7.98	2.5
Itta Bena †	85	26	52.8	6.42	2.0
Jackson †	85	27	54.0	2.85	.....
Kosciusko †	86	25	53.1	4.50	4.0
Lake †	82	24	54.3	3.30	.....
Leaf * [1]	80	32	57.5	.....	.....
Leakesville †	85	29	58.7	6.30	.....
Logtown †	83	34	60.6	4.97	.....
Louisville †	84	30	52.0	3.79	3.0
Macon	86	21	53.6	0.98	T.
Magnolia	85	28	59.1	6.12	.....
Meridian	.....	.....	.....	.....	T.
Mosspoint †	81	33	59.5	8.35	.....
Natchez †	85	30	58.9	4.09	.....
Okolona †	82	25	50.2	6.20	0.5
Palo Alto †	85	22	51.2	5.71	2.6
Pontotoc †	83	24	49.9	6.57	5.0
Port Gibson †	86	26	57.0	4.06	.....
Rosedale †	84	22	51.6	4.89	.....
Stonington *[1]	84	30	58.0	.....	.....
Thornton †	84	29	55.2	4.82	4.0
Topton *[5]	84	32	56.8	3.80	T.
University [k]	83	26	52.1	6.32	.....
Vaiden †	88	30	54.0	4.41	4.0
Water Valley * † [1]	87	30	50.3	7.82	T.
Waynesboro *a* †	86	27	54.0	5.10	.....
Woodville †	81	29	57.6	9.09	.....
Yazoo City †	87	24	54.1	3.64	T.
Missouri.					
Akron	.....	.....	.....	1.14	6.5
Appleton City	80	11	39.3	2.50	5.0
Arlington †	.....	.....	.....	2.25	5.0
Arthur * † [3]	.....	15	38.0	1.84	4.0
Bagnell †	.....	.....	.....	2.30	.....
Bethany	76	5	35.6	1.11	6.0
Birchtree	76	12	41.9	2.80	2.5
Boonville †	.....	.....	.....	3.88	7.1
Brunswick	75	11	40.4	0.80	.....
Carrollton †	77	13	38.6	1.54	4.8
Cedargap * [1]	78	12	39.2	2.92	4.2
Columbia	.....	.....	.....	.....	6.2
Conception	73	7	36.2	1.60	2.5
Cowgill * [5]	70	8	35.7	0.97	4.0
Darksville †	70	9	35.1	0.37	3.0
Downing	.....	.....	.....	0.37	3.2
East Lynne * [3]	.....	9	35.7	1.32	4.2
Edgehill * [5]	72	10	41.2	3.21	9.5
Eightmile * [1]	76	10	38.1	0.97	3.5
Eldon * [1]	76	12	40.3	1.55	5.0
Elmira	79	4	36.8	1.06	3.9
Emma * [3]	.....	12	38.8	1.00	8.0
Fairport	.....	.....	.....	1.08	2.0
Farmersville	.....	.....	.....	0.76	3.6
Fayette	79	12	38.8	1.28	7.5
Fulton	.....	.....	.....	1.70	8.0
Gallatin * [1]	73	8	36.0	0.81	2.5
Gayoso	.....	.....	.....	6.44	.....
Gordonville * [3]	.....	19	41.6	3.45	4.2
Gorin * [3]	74	13	35.0	0.66	1.2
Grovedale	82	4	41.5	2.48	2.2
Halfway	79	13	41.2	2.51	6.0
Hannibal	.....	.....	.....	.....	5.0
Harrisonville †	79	10	39.8	1.35	5.2
Hastain	81	20	41.2	1.40	4.0
Hermann †	.....	.....	.....	1.54	.....
Houston	76	8	40.9	2.96	3.0
Houstonia (near)	.....	.....	.....	1.02	8.2
Humansville	82	9	40.4	2.46	4.5
Irena	.....	.....	.....	1.36	4.0
Ironton * † [1]	71	11	40.2	3.73	8.0
Jefferson City †	79	14	41.4	1.87	10.5
Kansas City	.....	.....	.....	.....	4.6
Kidder	76	7	35.6	1.12	3.1
Lamar	79	17	41.6	1.78	3.0
Lamonte	.....	.....	.....	1.35	9.9
Lebanon	75	15	40.0	3.76	6.8
Lexington †	78	11	39.6	1.11	3.0
Liberty	80	13	40.8	0.93	1.8

TABLE II.—*Meteorological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Missouri—Cont'd.	°	°	°	*Ins.*	*Ins.*
McCune*†[1]	75	9	37.9	1.46	5.5
Macomb	.....	.....	.....	1.85	3.5
Mansfield	.....	.....	.....	2.47	2.5
Marblehill	71[e]	18[e]	41.4[e]	3.96	2.7
Marceline	77	8	35.9	0.90	2.0
Marshall†	80	11	36.8	0.87	5.0
Maryville*[4]	73	5	30.6	1.49	4.6
Mexico†	80	10	38.0	1.62	6.5
Miami	.....	.....	.....	1.30	8.0
Mine La Motte†	74	11	41.2	3.59	8.5
Mineralspring	80	14	45.2	2.33	4.2
Mount Vernon	78	12	37.0	2.10	3.0
Neosho	81	10	43.6	2.37	2.5
Nevada	.....	.....	.....	2.05	3.0
New Haven*[1]	76	20	44.2	1.42	6.0
New Madrid	68	22	46.0	8.70	2.0
New Palestine *†[1]	77	22	45.7	1.38	5.5
Oakfield†	77	14	40.3	1.83	11.8
Oakmound	.....	.....	.....	2.27	2.0
Oakridge*[4]	.....	20	41.8	4.57	11.2
Olden	75	16	41.9	2.46	2.4
Oregon *a*	78	8	38.0	1.70	4.4
Oregon *b*[1]	76	6	35.6	1.66	3.7
Osceola†	.....	.....	.....	2.15	6.0
Oto	.....	.....	.....	2.50	3.0
Palmyra*[5]	80	16	37.8	1.65	7.0
Phillipsburg*†[1]	76	12	38.8	3.37	9.1
Pickering*[5]	77	8	34.2	3.05	10.2
Platte River*[3]	76	8	33.4	1.10	5.0
Poplarbluff	80	17	44.6	3.99	.....
Potosi	75	5	38.0	3.83	16.0
Princeton*[1]	76	5	36.0	0.79	1.0
Rhineland	79	8	39.4	1.59	7.6
Richmond*[3]	78	10	35.4	0.52	2.0
Rolla	.....	.....	.....	2.99	6.9
St. Charles	74	15	39.8	2.23	10.0
St. Joseph†	.....	.....	.....	0.83	2.0
St. Louis	73	15	38.7	2.04	6.4
St. Louis (W. B.)	.....	.....	.....	.....	6.6
Sarcoxie*[3]	82	13	39.0	2.90	4.9
Shelbina	.....	.....	.....	1.15	1.5
Sikeston	73	21	44.4	5.62	1.0
Springfield	.....	.....	.....	.....	8.5
Steffenville	.....	.....	.....	0.76	2.5
Stellada†	81	10	39.8	1.74	8.0
Sublett	76	5	35.0	0.70	3.0
Tindall†	.....	.....	.....	0.84	3.0
Trenton	74	7	35.9	1.75	3.5
Unionville†	70	2	31.0	0.93	4.8
Virgil City	.....	.....	.....	1.68	4.2
Warrensburg*[1]	80	14	41.1	0.99	8.0
Warrenton	76	12	37.8	1.68	7.0
Wheatland	.....	.....	.....	2.28	7.2
Willow Springs	76	11	42.7	2.63	2.2
Zeitonia*[1]	79	16	48.4	2.28	2.6
Montana.					
Agricultural College	58	−15	28.6	0.87	.....
Bigtimber†	67	−13	32.4	2.13	19.0
Billings†	70	−16	36.6	0.80	8.0
Bozeman†	63	−16	28.7	1.05	7.0
Butte†	57	−21	25.7	0.32	6.4
Chinook†	48	−29	22.7	0.20	2.0
Choteau†	63[c]	−23[c]	25.8[c]	1.30	13.0
Cokedale†	65	−19	29.2	1.99	12.7
Columbia Falls†	58	−12	31.4	0.54	5.4
Deerlodge†	68	−20	27.8	0.86	4.4
Dillon†	60	−26	27.0	0.60	6.0
Fort Benton†	67	−25	28.8	0.16	.....
Fort Custer†	69	.....	.....	0.28	2.8
Fort Keogh†	75	−22	25.8	0.37	3.5
Fort Logan†	70	−28	27.6	0.19	.....
Fort Missoula	63	− 7	29.4	1.09	5.4
Glasgow†	64	−21	30.2	0.86	.....
Glendive†	62	−15	23.1	1.50	15.0
Greatfalls†	70	−27	32.6	1.39	11.8
Havre	.....	.....	.....	.....	6.7
Helena	.....	.....	.....	.....	13.5
Hogan†	56	−32	26.4	2.60	24.0
Kipp†	58	−32	23.0	1.50	14.5
Lewistown†	63	−28	24.8	1.60	13.5
Libby†	70	−15	35.2	0.91	7.0
Livingston†	67	−17	29.8	1.26	7.4
Manhattan†[f]	67	−23	26.8	0.01	.....
Martinsdale†	60	−25	29.0	0.65	5.5
Marysville†	57	−20	25.7	1.98	27.5
Miles City	.....	.....	.....	.....	1.9
Musselshell†	64	−38	23.0	0.32	.....
Poplar	53	−18	17.3	1.85	18.5
Radersburg†	.....	.....	.....	0.20	2.0
Redlodge†	56	−20	23.5	3.90	39.0
St. Ignatius Mission	65	− 8	33.6	.....	.....
St. Pauls	64	−19	22.2	0.54	8.3
Sun River†	52[b]	−27[b]	18.8[b]	0.82	8.2
Troy†	69	− 4	36.2	0.85	2.0
Utica†	61	−23	25.9	1.02	16.0
Virginia City†	58	−18	26.5	0.98	3.0
Montana—Cont'd.					
White Sulphur Springs†	60	−22	28.2	0.46	4.0
Wibaux†	76	−18	22.3	0.40	4.0
Yale†	65	−26	28.6	0.71	6.0
Nebraska.					
Agee*[1]	75	− 2	28.1	1.04	.....
Albion	66	− 3	29.2	0.90	9.0
Alliance	.....	.....	.....	2.10	21.0
Ansley†	82	− 9	28.2	1.95	19.5
Arapaho	.....	.....	.....	0.50	5.0
Arborville*[1]	76	− 4	28.7	1.45	12.0
Ashland *a*†	71	0	31.8	0.98	10.5
Ashland *b**[1]	70	6	33.1	1.08	10.0
Ashton	80	− 2	29.9	0.66	13.0
Auburn*†[1]	73	8	36.0	2.49	12.5
Aurora*[1]	73	2	31.0	0.69	.....
Bassett	73	−11	28.4	2.20	19.0
Beatrice†	75	0	32.8	1.30	13.0
Beaver City†	88	− 2	35.0	0.56	7.5
Benkelman*[1]	90	10	36.6	0.70	7.0
Bluehill*[1]	82	− 1	32.9	2.07	19.5
Bratton*[1]	72	8	33.2	2.52	10.0
Brokenbow*[1]	75	− 6	31.5	2.45	24.5
Burwell*[1]	60	0	30.7	1.85	14.5
Central City*[5]	62	9	33.3	1.30	13.0
Chester*[1]	75	0	32.4	1.65	15.5
Columbus†	69	− 1	31.9	0.48	7.0
Cook	65	4	34.2	4.07	12.0
Cornlea	.....	.....	.....	0.80	7.5
Creighton*†[1]	65	− 4	27.8	0.48	1.0
Crete	73	− 4	32.4	2.45	18.3
Culbertson	.....	.....	.....	0.57	8.5
Curtis *a*†	79	4	34.0	2.20	24.0
Curtis *b*	.....	.....	.....	1.90	19.0
David City*†[1]	64	4	30.2	2.70	11.0
Divide*[1]	80	2	31.2	0.76	11.5
Dunning*[1]	82	− 7	30.9	1.85	18.5
Edgar*[1]	76	3	32.4	2.35	22.0
Ericson*†[1]	60	1	29.2	1.10	11.0
Ewing	.....	.....	.....	1.40	9.0
Fairbury†	72	4	35.5	0.45	8.5
Fairmont*[1]	74	− 1	33.4	1.97	18.2
Fort Robinson	75	−16	31.9	1.50	12.0
Franklin†	88	8	33.6	0.85	8.5
Geneva†	77	− 7	32.2	1.56	15.5
Genoa†	66	− 3	29.4	0.54	6.8
Gering†	77	−17	29.0	1.50	13.5
Gibbon	80	− 8	30.9	1.70	20.0
Grand Island *a*[1]	82	4	33.0	2.72	20.7
Grand Island *b*	81	− 2	31.2	1.43	19.6
Greeley	.....	.....	.....	1.20	8.5
Haigler*[1]	76	10	37.0	0.85	8.5
Hartington†	63	− 6	26.4	1.67	9.5
Harvard*[1]	77	0	30.6	1.45	12.5
Hastings*[1]	78	− 4	28.9	1.69	21.0
Hays Center	.....	.....	.....	1.20	12.0
Hay Springs†	75	−19	26.3	2.30	19.4
Hebron†	78	− 8	33.2	1.03	11.0
Hickman*[5]	76	2	36.3	2.50	14.5
Holdrege *a*	.....	.....	.....	1.30	12.0
Imperial *b*[1]	74	0	34.2	0.80	8.0
Indianola*[5]	82	8	34.8	1.00	10.0
Kearney*[1]	70	4	29.2	2.10	21.0
Kennedy†	78	−11	26.9	1.95	18.0
Kirkwood*[1]	75	− 6	24.2	2.25	17.0
Lexington†	81	−14	31.6	2.06	19.5
Lincoln	72	0	33.8	0.98	8.0
Lodgepole	75	−15	30.7	2.80	28.0
Loup *a*[1]	75	− 2	31.8	0.99	11.5
Loup *b*[1]	78	0	31.8	1.14	13.0
Lynch*†[1]	75	− 2	28.0	1.13	8.2
Lyons	.....	.....	.....	0.53	5.5
McCook*[1]	75	4	36.6	1.00	10.0
McCool	.....	.....	.....	0.60	.....
Madison*[1]	63	0	26.6	0.70	5.5
Madrid*†[5]	75	0	34.3	1.90	19.0
Marquette	.....	.....	.....	1.06	10.5
Milford*[3]	67	− 1	30.5	1.75	14.5
Minden *a*[1]	79	− 5	30.4	1.72	18.7
Minden *b*	.....	.....	.....	1.49	14.0
Nebraska City *a*	72	5[f]	31.1[d]	3.97	15.0
Nebraska City *b*[1]	70	10	36.3	3.75	19.0
Nemaha City*[1]	78	6	33.6	3.40	13.0
Nesbit†	78	− 4	29.4	0.58	13.0
Norfolk†	64	2	29.5	0.67	6.7
North Loup†	78	−17	30.4	0.83	.....
North Platte	.....	.....	.....	.....	9.6
Oakdale†	65	− 1	27.7	1.14	8.1
Odell*[5]	68	10	35.2	2 00	10.0
Omaha*[1](V. O.)	64[c]	2	30.6[c]	1.75	13.0
Omaha (W. B.)	.....	.....	.....	.....	10.8
O'Neill*[1]	70	− 3	27.8	1.36	6.0
Ord	70	−12	30.0	1.29	17.0
Osceola	.....	.....	.....	1.33	12.2
Ough†	.....	.....	.....	0.90	9.0
Palmer *a*[1]	80	− 8	27.7	0.90	9.0
Palmer *b*	.....	− 2	.....	1.08	10.0
Nebraska—Cont'd.					
Plattsmouth *a*†	.....	.....	.....	2.15	18.0
Plattsmouth *b*	.....	.....	.....	2.00	17.0
Potter*[1]	72	−10	29.4	3.20	24.0
Ravenna *a*	82	−10	30.5	1.67	13.5
Ravenna *b*[1]	82	− 4	34.3	1.30	13.0
Redcloud *a*	.....	.....	.....	0.94	10.2
Redcloud *b*[1]	84	− 6	33.8	1.55	17.0
Republican*[1]	76	− 4	35.4	1.04	10.4
Rulo*[1]	74	-16	28.9	0.95	4.5
St. Paul	80	− 6	32.6	0.96	9.2
Salem*[1]	72	16	38.0	1.10	3.0
Santee Agency†	69	− 4	29.1	1.23	7.8
Sargent	.....	.....	.....	0.91	.....
Schuyler	.....	.....	.....	0.84	7.0
Seneca*[1]	72	0	32.2	1.40	14.0
Seward*[5]	75	− 1	33.6	1.75	14.0
Springview	76	− 7	28.6	1.01	9.4
Stanton*[1]	59	1	28.9	0.98	7.8
Stark*[1]	85	5	31.6	1.20	12 0
Strang*[1]	76	− 4	34.2	1.30	13.0
Stratton	.....	.....	.....	0.50	.....
Stromburg	.....	.....	.....	0.48	.....
Superior*[5]	79	0	33.2	1.80	15.5
Sutton	77	− 8	29.6	3.83	20.6
Syracuse	.....	.....	.....	1.37	.....
Tecumseh *a*†	76	2	34.4	2.77	16.5
Tecumseh *b*	.....	.....	.....	2.25	14.0
Tekamah	71	− 1	30.8	1.26	12.5
Thedford*[1]	80	−10	30.3	1.82	18.2
Turlington†	70	2	31.6	2.08	13.3
Wakefield	.....	.....	.....	0.98	8.8
Wallace*[1]	80	6	26.8	2.60	26.0
Weeping Water*[1]	70	− 4	32.7	1.51	13.5
Wesner	.....	.....	.....	1.03	.....
Whitman*[1]	70	−14	23.6	1.20	12.0
Wilber*[1]	78	0	35.5	1.32	9.5
Wilsonville*[1]	82	2	33.8	0.35	3.5
Woodlawn	.....	.....	.....	0.96	.....
York*[1]	72	− 5	35.2	1.94	16.0
Nevada.					
Austin	62	5	34.8	1.30	6.2
Battle Mountain*[1]	73	18	40.7	0.85	1.5
Belmont	63	5	34.2	0.85	5.0
Beowawe*[1]	73	10	38.4	0.85	1.5
Candelaria	76	10	42.8	0.37	4.8
Carlin*[1]	67	− 4	32.2	0.98	4.5
Carson City	68	13	40.9	2.23	3.8
Carson City (W. B.)	.....	.....	.....	.....	4.2
Cloverdale*[1]	70	16	42.1	0.75	7.0
Clover Valley†	.....	.....	.....	3.26	17.0
Cranes Ranch	.....	.....	.....	2.31	.....
Darrough Ranch	.....	.....	.....	0.70	2 0
Downeyville	78	15	46.0	0.83	3.0
Elko*[5]	68	− 2	35.7	3.75	19.0
Ely	68	−12	34.0	1.00	8.0
Empire Ranch†	66	0	34.4	0.39	5.0
Fenelon*[1]	64	− 3	31.6	2.60	17.5
Golconda*[5]	70	12	40.4	1.02	3.2
Halleck*[5]	70	− 5	35.5	2.82	11.5
Hamilton	78	−12	28.0	1.87	13.8
Hawthorne *a*[5]	74	26	45.7	0.26	1.0
Hawthorne *b*	76	18	43.6	0.16	1.0
Hot Springs*[1]	73	18	43.7	1.12	.....
Humboldt*[1]	73	10	40.3	1.45	7.0
Los Vegas	81	16	49.2	0.36	T.
Lewers Ranch	68	13	41.2	3.99	10.5
Lovelock*[5]	76	23	47.7	0.46	3.5
Mill City*[5]	72	10	40.2	0.75	1.0
Osceola†	70	9	37.4	0.85	8.0
Palisade*[1]	70	9	43.1	1.85	7.5
Palmetto	72	− 4	37.0	3.70	37.0
Reese River	.....	.....	.....	1.45	5.0
Reno*[5]	65	20	45.0	0.95	8.0
Reno State University	68	14	39.8	1.15	3.5
Ruby Valley†	.....	.....	.....	1.23	8.0
St. Clair	72	13	42.0	0.49	2.2
St. Thomas	90	26	57.0	0.60	.....
San Antonio	74	4	39.1	0.84	7.5
Silverpeak	74	5	44.4	0.53	5.0
Sodaville	77	16	44.3	0.29	3.0
Stofiel	60	−18	27.2	3.75	28.5
Sunnyside	75	5	40.3	0.35	3.5
Tecoma*[5]	59	9	36.6	0.50	2.0
Toano*[1]	70	4	34.6	1.25	10.5
Tuscarora	56	4	31.8	2.81	10.5
Tybo	67	1	37.6	0.74	11.0
Verdi*[5]	67	13	40.6	2.78	6.0
Wadsworth*[1]	80	10	38.6	0.22	1.0
Wells	65	− 6	34.6	1.91	10.2
Winnemucca	.....	.....	.....	.....	5.2
New Hampshire.					
Alstead*[6]	50	− 8	24.5	5.83	25.4
Belmont	.....	.....	.....	8.45	.....
Berlin*	52	−20	30.8	.....	.....
Berlin Mills	54	−20	21.2	8.18	47.0
Bethlehem	51	− 5	22.0	5.06	39.0

TABLE II.—*Meteorological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
New Hampshire—Con'd.	°	°	°	*Ins.*	*Ins.*
Brookline *[1]	60	— 6	27.0	5.54	16.8
Concord	56	— 5	28.1	6.56	31.0
Dublin	55	2	26.9	7.93	25.7
Durham	62	3	29.5	6.71	12.0
Grafton†	53	—15	23.6	6.36	31.0
Hanover	49	— 8	24.3	8.25	32.0
Keene	56	—11	26.0	6.19	18.7
Lakeport	.....	.....	.....	8.49	.....
Lancaster	52	—16	22.3	3.33	23.0
Nashua	62	4	29.2	6.45	19.2
Newton	60	3	28.6	4.44	16.0
North Conway	60	— 6	26.0	11.86	33.0
Plymouth	52	—13	21.9	7.83	32.4
Sanbornton†	50	.....	24.1	6.41	29.0
Stratford	57	—18	23.2	4.52	26.0
Weirs Bridge	.....	.....	.....	7.64	.....
West Milan	50	—26	20.8	7.38	36.5
Wolfboro	.....	.....	.....	6.10	.....
New Jersey.					
Allaire	63	6	34.8	.....	.....
Asbury Park	60	12	34.4	4.89	8.8
Barnegat	62	15	36.3	4.68	5.0
Bayonne	67	13	34.6	5.44	24.0
Beachhaven	53	18	35.2	3.63	0.5
Belvidere	69	— 5	31.8	5.71	23.0
Beverly†	70	11	35.7	5.86	13.2
Billingsport *[1]	64	12	34.1	5.65	5.5
Blairstown	66	— 4	30.2	5.47	25.5
Boonton	63	4	31.4	6.86	21.1
Bridgeton	65	20	38.1	5.59	2.0
Camden	65	12	35.3	4.74	9.0
Cape May	60	19	37.6	3.14	3.8
Cape May C. H.†	64	16	38.4	5.21	3.2
Charlotteburg	61[e]	2[e]	28.8[e]	6.04	23.0
Chester	59	4	30.2	6.40	22.0
Deckertown	61	— 2	30.2	5.40	18.8
Dover	64	— 4	30.9	7.16	29.5
Egg Harbor City	63	12	34.6	5.93	4.0
Elizabeth†	64	7	33.4	5.17	14.5
Englewood	64	— 2	30.9	6.05	20.8
Franklin Furnace	59	— 5	29.5	6.02	16.5
Freehold	62	6	33.1	4.96	.....
Friesburg	.....	.....	.....	4.96	4.5
Gillette	60	5	30.2	5.53	15.0
Hammonton	.....	.....	.....	4.82	.....
Hanover	61	4	32.3	5.17	9.3
Hightstown	67	10	34.6	5.70	11.0
Imlaystown	65	11	34.4	4.56	8.9
Junction	.....	.....	.....	5.28	20.5
Lambertville	64	8	33.6	4.95	11.0
Millville	66	12	36.8	4.68	3.5
Moorestown	67	11	35.9	6.13	9.0
Newark *b*†	64	12	33.3	6.45	21.8
New Brunswick *a*	67	7	35.9	5.83	.....
New Brunswick *b*	62	8	33.0	5.01	.....
Newton	60	3	29.4	6.17	19.0
Ocean City	56	16	35.2	5.18	2.0
Oceanic	61	15	35.8	5.15	10.5
Paterson	69	10	35.2	6.84	22.0
Plainfield	68	6	34.4	6.30	23.1
Rancocas	.....	.....	.....	4.76	11.0
Readington *[6]	66	8	35.7	.....	.....
Rivervale	64	— 8	31.8	7.38	29.0
Somerville	68	— 4	33.4	5.95	17.5
South Orange	63	8	31.8	4.58	25.0
Staffordville	.....	.....	.....	4.48	4.0
Toms River	64	8	34.8	5.79	9.3
Trenton	66	12	36.9	4.85	15.0
Vineland	66	10	36.8	4.50	2.0
Whiting	66	14	37.2	4.58	5.5
Woodbine	64	20	38.6	5.77	3.0
New Mexico.					
Albert†	83	19	45.9	0.08	0.8
Albuquerque†	80	17	49.4	0.01	T.
Alma†	83	12	49.7	0.14	.....
Aztec†	75	6	41.3	0.10	T.
Bernalillo†	82	11	43.9	0.00	.....
Chama†	72	0	36.3	2.20	22.0
Clayton	79	8	44.0	0.23	2.2
Deming *[8]	90	27	54.7	0.00	.....
East Lasvegas	73	3	42.3	0.83	7.3
Eddy†	90	26	55.2	0.00	.....
Engle†	86	14	50.8	0.00	.....
Espanola†	76	15	44.4	0.06	T.
Fort Bayard	78	17	48.4	T.	T.
Fort Wingate	75	4	42.7	0.45	4.5
Galisteo†	81	12	44.8	0.03	.....
Gallinas Spring†	82	10	45.5	0.15	3.5
Gila	85	22	25.8	0.33	0.5
Hillsboro†	86	14	52.6	0.06	.....
Labelle	59	— 2	28.9	0.89	15.7
Las Cruces†	89	15	50.8	0.00	.....
Lordsburg *[8]	80	32	56.7	0.48	.....
Los Lunas†	84	8	45.0	0.00	.....
Lower Penasco	81	17	49.0	0.10	1.0
Monero†	66	4	35.7	0.42	3.5
New Mexico—Cont'd.	°	°	°	*Ins.*	*Ins.*
Ocate†	69	3	39.4	0.55	5.5
Puerto de Luna†	82	18	48.4	0.10	1.0
Raton	70	6	36.6	T.	T.
Rincon†	89	19	54.8	0.05	.....
Roswell†	89	16	54.1	0.02	.....
San Marcial†	89	14	52.4	T.	T.
Santa Fe	.....	.....	.....	.....	4.8
Shattucks Ranch *[6]	79	15	45.9	0.33	3.0
Springer	78	1	39.4	0.30	3.0
Sulphur Hot Springs†	64	— 2	34.0	1.96	19.0
Taos†	78	13	40.8	0.48	5.5
Valley Ranch	70	10	40.2	0.12	T.
Winsors Ranch	.....	.....	.....	0.49	.....
New York.					
Addison	64	— 8	25.4	3.05	24.0
Akron	.....	.....	.....	3.95	.....
Albany	.....	.....	.....	.....	23.8
Alfred	57	— 6	21.9	4.33	32.7
Angelica†	58	— 6	23.3	4.21	28.5
Appleton	60	8	26.1	2.65	11.5
Arcade	56	— 2	21.4	3.50	30.6
Atlanta	.....	.....	.....	2.41	.....
Avon	59	— 2	24.4	3.23	.....
Baldwinsville	52	— 2	24.1	4.52	30.1
Bedford	62	7	31.8	7.03	24.9
Big Sandy *[10]	50	— 2	21.6	.....	.....
Binghamton†	50	—10	24.4	4.68	21.2
Bloomville	52	—14	22.4	2.84	.....
Bolivar	.....	.....	.....	3.79	.....
Boyds Corners	.....	.....	.....	8.30	19.8
Brentwood	64	5	32.4	2.82	15.2
Brookfield	54	0	24.8	4.23	32.0
Brooklyn	65	14	33.6	6.14	40.0
Buffalo	.....	.....	.....	.....	13.4
Canton†	51	—20	19.6	4.49	.....
Carmel	58	.....	28.6	6.90	18.0
Charlotte *[10]	56	11	27.8	.....	.....
Cherry Creek	.....	.....	.....	4.29	.....
Cooperstown†	52	— 8	22.3	4.74	26.5
Cortland	56	— 8	23.2	4.54	.....
De Kalb Junction	.....	.....	.....	3.30	.....
Demster	.....	.....	.....	3.53	.....
Deposit	.....	.....	.....	3.60	.....
Eagle Mills	.....	.....	.....	2.60	.....
Easton	.....	.....	.....	4.52	.....
Elmira †	65	0	28.2	3.22	15.8
Fleming	57	2	24.8	3.95	31.0
Fort Niagara†	61	4	26.4	2.54	.....
Friendship	60	— 7	24.4	3.45	23.4
Fulton	.....	.....	.....	4.74	.....
Glens Falls	58	— 8	24.8	6.52	32.0
Gloversville	49	— 8	22.8	6.59	32.7
Hamilton	56	—10	21.6	3.52	11.5
Haskinville	.....	.....	.....	2.43	.....
Honeymead Brook	57	—10	26.4	5.34	17.4
Humphrey †	62	3	24.9	3.33	30.3
Ithaca	57	— 3	25.2	4.75	27.4
Jamestown	77	0	26.6	5.21	36.0
Kings Station	.....	.....	.....	6.40	.....
Lebanon Springs	50	— 8	25.7	5.22	21.5
Lowville	49	—11	21.0	4.88	27.0
Lyons	53	3	26.2	5.25	42.0
Madison Barracks†	55	— 7	23.1	1.96	14.5
Malone	54	—10	19.6	4.75	29.3
Manhattan Beach	.....	.....	.....	3.93	16.5
Middletown	58	1	27.4	8.09	27.0
Mohonk Lake	54	2	26.3	11.07	33.0
Mount Morris	62	0	26.7	1.92	13.0
Newark Valley	.....	.....	.....	3.98	.....
New Lisbon	53	—15	21.7	3.96	28.2
New York	.....	.....	.....	.....	28.5
North Hammond†	50	— 8	21.6	3.34	12.5
Number Four†	46	—12	18.6	6.55	50.4
Ogdensburg	51	— 8	22.5	.....	17.8
Oneonta	70	— 2	27.3	4.79	.....
Oswego	.....	.....	.....	.....	18.2
Oxford	55	—11	24.6	5.66	28.3
Palermo†	49	—10	22.6	3.67	28.0
Perry City	54	— 9	22.0	3.70	26.8
Phœnix	.....	.....	.....	6.26	.....
Pine City	.....	.....	.....	3.16	.....
Pittsford	58	3	25.0	4.84	.....
Plattsburg Barracks	48	— 5	21.5	4.95	28.2
Port Jervis	61	— 5	28.4	6.60	24.0
Potsdam	47	—13	19.1	3.81	24.0
Poughkeepsie	63	— 7	28.4	6.20	23.0
Ridgeway	.....	.....	.....	2.00	.....
Rochester	.....	.....	.....	.....	45.1
Rome	51	— 4	24.2	4.74	.....
Romulus	60	2	25.2	4.47	24.0
Rose†	.....	.....	.....	4.73	.....
Saranac Lake	54	—19	17.7	4.31	35.0
Setauket†	60	15	33.1	4.81	14.0
Sherwood	.....	.....	.....	4.85	.....
Skaneateles	.....	.....	.....	5.56	.....
South Canisteo	59	—11	23.4	3.62	27.1
New York—Cont'd.	°	°	°	*Ins.*	*Ins.*
Southeast Reservoir	.....	.....	.....	6.80	16.8
South Kortright†	59	—11	24.6	3.76	.....
Turin	47	— 3	19.5	4.63	37.9
Varysburg	61	—10	23.2	3.95	29.4
Victor	58	4	25.2	.....	29.0
Wappingers Falls	60	3	31.2	7.84	33.0
Warwick	.....	.....	.....	4.86	.....
Watertown	60	— 5	24.7	5.23	.....
Waverly†	64	—15	26.4	3.40	20.8
Wedgwood	64	— 3	23.9	3.43	24.5
Westfield	68	0	26.7	2.58	.....
Westpoint†	54	7	29.5	12.02	.....
Willetspoint	63	15	31.3	7.41	26.5
North Carolina.					
Asheville†	75	17	43.7	1.92	1.5
Beaufort†	69	30	52.2	2.52	.....
Bryson City†	.....	.....	.....	3.92	4.0
Chapelhill†	77	23	46.4	2.54	.....
Charlotte	.....	.....	.....	.....	0.4
Currituck Inlet	.....	.....	.....	1.10	T.
Edenton†	77	25	48.8	2.26	T.
Experimental Farm	75	23[4]	48.0	2.93	0.5
Fairbluff†	.....	.....	.....	2.05	T.
Falkland *[1]	76	27	49.6	3.09	T.
Fayetteville†	79	25	51.0	2.13	T.
Greensboro†	74	23	47.8	1.91	.....
Greenville	.....	.....	.....	2.59	.....
Hatteras	.....	.....	.....	.....	T.
Henderson†	79	21	46.6	3.90	2.0
Highlands	69	10	39.8	2.82	2.5
Highpoint *[1]	72	28	47.2	3.05	.....
Horse Cove†	71	15	43.1	2.80	0.5
Jefferson†	69	8	39.5	5.08	2.9
Kittyhawk	.....	.....	.....	.....	T.
Lenoir *† [1]	70	19	45.1	2.87	.....
Linville†	63	8	36.4	3.58	5.0
Littleton†	76	22	46.0	3.36	2.0
Louisburg†	77	22	47.4	2.48	T.
Lumberton†	83	25	50.6	1.80	.....
Lynn *† [2]	78	.....	45.8	2.34	.....
Marion	76	25	48.8	2.26	T.
Mocksville†	79	20	48.3	2.04	1.5
Moncure†	76	22	48.2	2.30	T.
Monroe	78	20	48.8	1.50	.....
Morganton *† [1]	72	24	47.3	3.93	.....
Mountairy†	72	15	43.4	5.01	1.0
Mount Pleasant	77	20	48.4	2.19	0.2
Murphy†	.....	.....	.....	2.62	3.0
Newbern†	83	26	53.2	1.87	T.
Oakridge†	79	19	47.1	2.75	1.0
Pittsboro	70	20	45.8	2.90	0.2
Raleigh (V. O) *[1]	70	23	50.1	.....	.....
Raleigh (W. B)	.....	.....	.....	.....	0.5
Rockingham†	82	24	52.5	1.88	T.
Roxboro†	76	18	45.5	2.10	1.5
Rutherfordton†	65	6	40.2	4.30	.....
Salem †	77	18	44.6	2.33	0.5
Salisbury	72	21	45.8	2.42	.....
Saxon†	76	20	47.0	2.98	3.0
Selma	80	26	49.8	2.23	.....
Settle	.....	.....	.....	3.23	2.3
Skyuka	74	20	43.1	1.83	T.
Sloan†	85	23	52.1	2.10	T.
Soapstone Mount†	77	18	46.4	2.76	2.0
Southern Pines	82	22	54.0	0.90	.....
Southport†	72	27	52.8	2.66	.....
Springhope *[1]	70	23	46.5	1.60	T.
Tarboro	78	20	48.8	1.69	0.2
Waynesville†	75	15	44.2	3.06	2.1
Weldon†	77	24	47.2	3.01	1.0
Willeyton	79	22	48.0	2.15	2.0
Wilmington	.....	.....	.....	.....	T.
North Dakota.					
Amenia	46[e]	—30[e]	13.6[e]	1.04	8.7
Ashley†	57	—25	16.0	3.27	26.7
Bismarck	.....	.....	.....	.....	5.2
Buxton	45	—30	15.4	1.04	6.5
Churchs Ferry	57	—25	15.8	1.44	13.4
Coalharbor†	62	—15	15.6	1.20	6.0
Dickinson†	63	—17	17.8	1.01	7.0
Ellendale	50	—24	17.0	2.21	12.0
Falconer	68	—20	17.5	0.39	3.9
Fargo†	49	—30	12.4	0.48	1.6
Forman†	50	—32	15.4	2.11	10.7
Fort Berthold†	68	2	26.3	0.40	4.0
Fort Yates†	70	—20	18.6	T.	T.
Gallatin†	60	—35	14.9	0.88	6.1
Glenullin†	66	—17	18.2	0.40	1.1
Grafton†	45[e]	—32[e]	11.4[e]	0.39	3.9
Grand Rapids	48	—31	13.9	1.45	11.0
Jamestown†	58	—18	17.6	1.20	12.0
Larimore†	56	—22	16.4	.....	.....
Lemert *†	57	—34	13.8	1.40	14.0
McKinney	51	—25	15.7	1.24	0.7
Mayville	45	—21	17.2	0.91	6.2
Medora†	64	—24	22.4	0.45	4.5

TABLE II.—*Meteorological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
North Dakota—Cont'd.	°	°	°	*Ins.*	*Ins.*
Milton†	48	−24	12.2	1.67	16.7
Minto	59	−32	14.8	0.59	.....
Napoleon†	57	−19	15.6	1.72	11.2
New England City	65	−20	18.2	0.92	9.2
Oakdale†	64	−14	20.1	1.32	13.2
Portal†	53	−18	14.8	1.62	6.0
Power†	50	−33	13.0	1.21	8.5
St. John†	54	−18	14.2	1.02	10.0
Sheyenne	63	−26	17.0	2.05	20.5
Steele†*	61	−21	15.5	1.17	9.2
Towner	59	−31	13.2	0.91	5.7
University†	52	−22	16.0	0.46	4.8
Wahpeton†	55	−28	17.4	1.78	4.8
Wildrice†[2]	.....	.....	12.9	1.71	14.4
Williston	.....	.....	.....	.....	11.0
Willow City†	56	−27	13.8	0.40	2.0
Woodbridge†	44	−35	11.4	0.94	2.0
Ohio.					
Akron	65	6	29.6	3.20	13.8
Annapolis	67	0	31.0	4.16	24.2
Ashland	65	2	29.1	5.12	19.5
Ashtabula	68	9	28.8	3.80	18.0
Athens	68	−1	36.2	3.83	15.8
Atwater	.....	.....	.....	2.66	12.4
Auburn	55	2	26.8	2.75	9.5
Bangorville	63	0	30.4	4.10	13.0
Basil	.....	.....	.....	4.07	16.0
Bellefontaine	64	−1	29.8	3.92	18.0
Benton Ridge	70	8	30.9	3.15	20.0
Bethany	66	5	35.2	4.13	15.0
Bigprairie	65	0	29.6	4.02	26.0
Binola	65	4	30.5	3.06	13.0
Bissells	63	0	28.2	2.90	18.2
Bladensburg	68	−3	32.2	3.57	13.3
Bloomingburg	67	4	34.0	2.68	8.0
Bowling Green	67	5	30.8	2.76	12.2
Bucyrus	70	−2	30.8	2.12	16.2
Caledonia	.....	.....	.....	3.52	16.1
Cambridge	65	−2	32.0	4.17	9.0
Camp Dennison	71	8	36.7	3.47	6.6
Canal Dover	68	0	31.6	3.55	15.0
Canfield	62	9	36.4	2.62	17.1
Canton†	67	6	31.5	3.83	12.6
Cardington	65	0	31.7	2.99	10.0
Carrollton	60	−6	28.8	3.25	12.0
Cedarville	.....	.....	.....	3.38	21.5
Celina	68	6	35.4	2.50	9.0
Cherryfork	73	2	35.2	3.93	16.0
Cincinnati	.....	.....	.....	.....	13.9
Circleville[b]	66	7	35.9	2.88	9.0
Clarksville	65	1	34.2	4.03	11.2
Cleveland (V. O.)	67	7	30.4	3.18	13.4
Cleveland (W. B.)	.....	.....	.....	.....	9.9
Clifton	67	1	33.2	2.92	17.0
Coalton	68	−2	34.6	4.21	17.0
Colebrook	65	2	38.2	3.02	10.0
Columbus	.....	.....	.....	.....	14.9
Dayton[a]	68	8	35.6	3.12	12.0
Dayton[b]†	.....	.....	.....	2.23	.....
Defiance	71	4	32.9	2.50	12.2
Delaware[c]	66	6	32.2	4.02	.....
Demos	63	6	32.2	2.85	21.2
Dupont	65	4	31.2	2.15	12.0
Elyria	67	5	30.2	1.41	10.6
Fairport Harbor*[10]	70	5	29.8	.....	.....
Fayetteville	66	1	34.4	4.49	18.7
Findlay	69	2	32.4	3.18	12.5
Frankfort	68	−2	35.0	3.27	15.8
Garrettsville	65	−3	28.8	3.31	17.0
Granville	65	1	32.2	3.25	11.5
Gratiot	66	0	33.4	3.34	10.0
Greenfield	65	9	35.2	1.69	13.0
Greenhill	66	−7	29.0	2.64	15.0
Greenville	64	3	32.6	3.41	19.0
Hackney	65	5	39.6	4.43	11.5
Hanging Rock	68	6	36.1	5.36	14.1
Hedges	67	1	31.8	2.68	21.0
Hillhouse	66	1	27.4	3.30	17.0
Hillsboro	69	−5	34.1	3.95	15.3
Hiram	69	3	28.8	3.50	12.0
Hudson	64	−2	29.4	4.60	18.0
Jacksonboro	72	3	35.1	2.70	26.0
Kenton†	69	4	31.3	4.03	20.1
Killbuck	66	2	31.2	2.66	11.2
Lancaster	64	4	32.7	3.48	6.5
Leipsic	67	4	31.0	3.01	12.5
Levering	67	−4	29.9	2.77	.....
Logan	71	−2	35.2	4.29	18.5
Lordstown	66	0	28.9	2.58	11.8
McArthur	66	−5	34.5	5.02	13.5
McConnelsville	69	1	34.3	3.35	13.0
Mansfield	.....	.....	.....	4.06	21.2
Marietta[a]†	.....	.....	.....	3.85	18.0
Marietta[b]	69	2	36.2	4.46	14.0
Marion	70	1	32.2	2.88	19.1
Medina	67	−1	30.2	3.07	16.0
Ohio—Cont'd.	°	°	°	*Ins.*	*Ins.*
Milfordton	65	0	28.8	3.31	12.0
Milligan	70	−6	34.6	3.95	13.0
Millport	65	6	34.0	3.04	12.5
Montpelier	65	0	29.6	1.89	11.5
Napoleon	.....	3	.....	2.18	9.5
New Alexandria	63	4	30.8	.....	12.0
New Berlin	65	2	30.4	.....	7.2
New Bremen	67	1	31.7	2.90	24.0
New Comerstown	67	4	32.4	3.39	6.5
New Holland	67	5	33.8	4.32	24.0
New Moscow	.....	.....	.....	2.87	10.5
New Paris	71	1	33.6	3.91	28.5
New Waterford	.....	.....	.....	3.13	23.0
North Lewisburg	66	3	31.0	4.60	24.0
North Royalton	65	0	29.1	2.33	15.0
Norwalk	68	−5	30.4	3.95	17.5
Oberlin	60[d]	1[d]	30.9[d]	1.38	13.2
Ohio State University	66	5	33.9	2.60	8.4
Orangeville	64	−1	28.0	2.35	9.0
Ottawa	67	3	32.6	3.41	16.5
Pataskala	66	1	32.4	3.36	15.5
Perry	.....	.....	.....	4.66	15.0
Philo	65	4	33.0	2.64	8.0
Plattsburg	64	4	32.5	4.73	20.0
Pomeroy	68	7	34.8	3.88	27.2
Portsmouth[a]†	.....	.....	.....	4.45	17.0
Portsmouth[b]	71	14	39.1	4.55	20.0
Richwood	.....	.....	.....	2.70	15.5
Ridgeville Corners	69	1	31.0	1.80	11.0
Ripley	67	8	36.1	3.98	18.5
Rittman	65	3	28.8	2.66	5.7
Rockyridge	68	4	30.8	2.57	16.0
Rosewood	68	3	31.6	4.80	16.5
Sandusky	.....	.....	.....	.....	8.2
Sharon Center	65	10	33.4	2.63	12.0
Shenandoah	65	−3	29.6	2.59	14.5
Sidney[a]	.....	.....	.....	4.34	12.9
Sinking Spring	66	3	34.8	3.79	14.4
Springboro	.....	.....	.....	1.61	11.0
Spring Valley	65	3	32.8	2.96	10.0
Sylvania	64	1	29.0	3.09	16.5
Thurman	70	4	37.0	3.93	20.0
Tiffin†	67	5	31.4	4.51	25.8
Toledo	.....	.....	.....	.....	13.4
Upper Sandusky	67	4	32.0	3.74	18.5
Urbana	63	6	32.8	3.45	19.0
Vanceburg	70	10	37.6	5.06	14.5
Van Wert	67	2	31.4	3.26	17.0
Vermilion	66	3	29.4	3.62	21.0
Vickery	67	5	31.0	2.61	11.4
Walnut	64	8	34.4	3.08	15.5
Warren	66	2	29.2	3.65	18.5
Warsaw	66	−2	29.2	1.41	6.0
Wauseon	66	0	30.7	2.80	15.0
Waverly	68	1	36.3	3.88	10.3
Waynesville	.....	.....	.....	3.43	21.0
Wellington	67	8	32.0	2.60	17.0
Westerville	66	5	33.6	2.58	9.6
Willoughby	.....	.....	.....	3.35	14.0
Wooster[a]	65	4	29.8	3.67	12.8
Wooster[b]	.....	.....	.....	3.15	10.0
Youngstown	65	5	28.4	1.59	8.5
Oklahoma.					
Alva†	85	18	41.7	0.50	.....
Anadarko†	86	20	51.2	1.07	.....
Arapaho†	84	21	46.4	0.86	2.0
Beaver	90	9	44.6	0.57	1.3
Buffalo	68	16	43.9	0.15	1.5
Burnett	85	19	48.4	1.27	.....
Clifton†	87	16	47.2	0.95	.....
Enid	84	20	45.6	0.75	.....
Fort Reno†	85	21	46.4	0.60	.....
Fort Sill	87	21	49.2	1.23	0.1
Guthrie†	83	23	48.3	1.38	.....
Hennessey†	87	23[f]	48.4[e]	0.72	T.
Keokuk Falls†	81	20	44.2	1.77	.....
Mangum†	88	23	50.0	0.10	3.0
Norman†	86	20	48.4	1.12	.....
Ponca†	82	18	44.0	1.70	T.
Pondcreek†	83	15	41.6	0.86	.....
Prudence†	.....	.....	.....	1.64	.....
Sac and Fox Agency†	84	20	48.8	1.40	.....
Stillwater†	85	19	46.4	1.21	.....
Winnview	82	20	45.6	0.67	.....
Woodward†	86	17	44.0	0.10	.....
Oregon.					
Albany[a]†	71	23	46.2	3.66	2.5
Arlington†	68	15	44.6	0.45	.....
Ashland[b]	72	23	46.4	2.73	1.9
Astoria	.....	.....	.....	.....	2.5
Aurora**	73	26	48.3	2.57	T.
Aurora (near)	70	20	44.7	2.75	1.0
Baker City	.....	.....	.....	.....	5.2
Bandon	64	29	48.2	3.98	4.5
Beulah†	67	12	38.0	0.90	4.0
Brownsville**	70	24	46.7	3.74	2.0
Oregon—Cont'd.	°	°	°	*Ins.*	*Ins.*
Burns	67	0	32.5	2.10	8.0
Cascade Locks	70	17	44.7	7.68	.....
Comstock**	72	21	46.3	5.37	6.0
Corvallis[a]	71	21	44.3	3.13	2.0
Corvallis (near)	68	20	45.4	4.42	0.5
Crook	66	1	35.7	1.09	9.0
Dayville†	76	13	43.2	0.95	1.0
Detroit†	68	12	37.2	8.92	.....
Eugene†[a]	67	20	45.9	4.37	2.5
Eugene†[b]	.....	.....	.....	4.79	.....
Fife†	64	4	34.7	1.00	8.0
Forest Grove	71	19	43.5	2.46	6.0
Gardiner	68	26	47.4	5.66	4.5
Glenora	75	11	42.5	8.99	11.5
Grants Pass[a]†	75	22	46.8	3.66	6.8
Hood River (near)	67	10	41.8	5.00	14.0
Hubbard	67	22	43.4	2.87	2.0
Irvington	.....	.....	.....	1.44	.....
Jacksonville	72	22	46.0	2.11	0.8
Joseph†	60	−13	31.9	1.24	10.0
Junction City**	78	24	46.1	3.01	4.5
Lafayette**	72	19	46.5	2.76	5.5
La Grande†	64	8	37.8	.....	T.
Lakeview†	62	2	35.4	2.32	6.5
Langlois	80	29	51.0	7.42	8.0
Lone Rock	68	−3	34.2	1.66	4.0
Lorella	66	−5	37.7	9.22	9.2
McMinnville[a]†	68	19	44.5	3.25	5.0
Merlin	.....	.....	.....	4.09	15.0
Monmouth**	68	22	46.7	3.01	4.0
Mount Angel†	76	23	46.4	3.50	1.5
Nehalem	.....	.....	.....	8.52	5.5
Newberg	72	19	45.8	2.97	2.2
Newbridge	67	15	40.8	0.38	3.0
Newport	70	25	46.1	5.54	.....
Pendleton	73	2	43.2	1.09	2.3
Portland	.....	.....	.....	.....	1.2
Riddles**	78	24	43.7	2.12	3.0
Roseburg	.....	.....	.....	.....	11.3
Salem[b]†	68	23	45.2	2.60	.....
Salmon	62	3	31.7	13.93	63.0
Sheridan**	68	20	49.3	1.67	.....
Silver Lake	66	4	33.8	.....	.....
Silverton**	68	22	43.9	3.46	1.2
Siskiyou**	70	19	42.4	3.85	13.0
Sparta	58	2	34.8	0.82	5.5
Springfield**	68	22	44.6	5.04	2.5
The Dalles†	70	16	44.8	1.00	3.0
Tillamook Rock L. H.	.....	.....	.....	3.89	.....
Toledo	70	21	43.6	5.74	2.0
Umatilla	.....	.....	.....	0.32	.....
Vale	74	13	41.4	0.68	1.0
West Fork**	72	30	47.1	5.60	20.0
Weston	78	−4	40.3	1.25	T.
Williams	69	24	46.6	3.49	3.0
Pennsylvania.					
Altoona	.....	.....	.....	1.77	.....
Aqueduct	67	−4	33.8	4.08	18.2
Beaver Dam†	.....	.....	.....	3.32	9.0
Bethlehem	.....	.....	.....	5.82	20.5
Blooming Grove	57	−9	24.2	7.98	32.8
Brookville†	.....	.....	.....	2.47	12.0
Browers Lock	.....	.....	.....	5.09	.....
Cameron	.....	.....	.....	3.12	19.0
Carlisle	69	−5	32.4	4.20	27.5
Cassandra	66	0	30.0	5.24	40.0
Cedarrun	.....	.....	.....	2.35	12.0
Centerhall†	67	−5	27.6	3.77	29.5
Chambersburg†	66	−8	31.8	4.58	29.0
Coatesville	68	−1	34.4	5.01	16.8
Confluence†	.....	.....	.....	4.21	27.0
Coopersburg	67	8	34.5	5.43	20.4
Davis Island Dam†	.....	.....	.....	3.99	.....
Doylestown	.....	.....	.....	5.04	.....
Driftwood	.....	.....	.....	2.89	.....
Dubois†	.....	.....	.....	3.87	25.9
Duncannon	.....	.....	.....	3.98	24.8
Dyberry†	59	−18	34.0	4.86	29.0
East Bloomsburg	.....	.....	.....	2.55	18.0
East Mauch Chunk	66	−9	30.4	6.95	24.0
Easton	61	2	31.0	3.99	21.2
Edinboro*[1]	60	2	34.4	.....	.....
Ellwood Junction†	.....	.....	.....	3.74	18.5
Emporium	63	−10	27.8	4.36	29.3
Erie	.....	.....	.....	.....	30.9
Farrandsville	.....	.....	.....	2.70	24.0
Forks of Neshaminy*[1]	69	12	37.8	5.59	10.0
Frederick	.....	.....	.....	4.28	.....
Freeport†	.....	.....	.....	4.30	7.0
Girardville	.....	.....	.....	6.00	25.5
Grampian	62	−4	25.8	4.02	26.0
Greensboro†	.....	.....	.....	4.10	26.0
Hamburg	67	−1	33.0	5.02	26.0
Harrisburg	.....	.....	.....	.....	21.2
Hollidaysburg	67	−11	30.2	4.96	32.5
Honesdale	65	−16	28.0	6.08	31.0

TABLE II.—*Meteorological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Pennsylvania—Cont'd.	°	°	°	*Ins.*	*Ins.*
Huntingdon *a*†	68	— 4	32.0	3.20	19.6
Huntingdon *b*				3.32	18.0
Johnstown†				3.80	29.0
Karthaus				2.35	25.0
Keating				2.64	17.5
Kennett Square	64	5	34.1	5.63	13.2
Lancaster	63	4	33.3	4.95	20.5
Lansdale				4.65	
Lebanon	66	—10	32.2	5.29	26.8
Leroy†	57	— 6	24.2	4.58	25.2
Lewisburg	67	—14	30.0	3.74	22.0
Lock Haven *a*†	69	— 7	32.4	5.48	29.0
Lock Haven *b*				4.05	22.0
Lock No. 4†				4.03	20.0
Lycippus	67	6	30.8	4.17	30.0
Mifflin				3.50	21.5
Nisbet				2.52	15.0
Oil City†				3.18	14.6
Ottsville				4.96	
Parker†				3.55	20.0
Philadelphia *b*	63	15	36.4	4.88	10.4
Philadelphia W. B.					9.3
Pittsburg					17.0
Point Pleasant				6.55	
Pottstown	66	4	34.3	5.39	18.0
Quakertown	64	— 3	31.4	4.67	19.0
Reading[5]			31.4	4.85	
Renovo				2.87	11.0
Ridgway†				3.21	20.0
Saegerstown	66	—10	27.2	3.42	14.7
Salem Corners	60	0	26.4	5.96	28.8
Scranton	65	— 7	29.4	4.78	16.0
Seisholtzville				4.58	
Selinsgrove	68	—10	30.6	4.04	28.0
Shawmont				4.59	8.0
Shinglehouse	60	— 8	25.6	2.70	18.0
Sinnamahoning				1.65	
Smethport	63	— 7	26.0	4.23	25.5
Smiths Corners				5.57	
Somerset	66	— 4	30.8	4.72	36.0
South Bethlehem *[1]	65	6	36.7		
South Eaton	64	— 5	28.6	4.45	22.5
Spruce Creek				4.97	
State College	61	3	28.6	2.82	18.0
Sunbury				3.40	15.0
Towanda	63	—12	26.7	3.88	21.8
Uniontown	68	4	32.6	4.61	36.5
Warren†				3.86	19.0
Waterville				2.43	4.5
Wellsboro *† [1]	64	—10	24.1	3.60	20.5
West Chester	64	9	34.0	5.42	15.5
West Newton†				4.53	22.0
Westtown	64	6	34.2	4.78	7.5
White Haven *[1]	62	—13	27.2	5.70	21.1
Wilkesbarre†	67	5	31.7	6.31	21.5
Williamsport	64	1	30.2	4.16	20.0
York†	68	— 6	33.4	4.20	23.5
Rhode Island.					
Block Island					16.2
Bristol	57	14	32.0	5.22	15.5
Kingston	61	5	30.6	6.39	19.0
Lonsdale				5.60	16.5
Narragansett Pier					16.0
Pawtucket	59	15	32.4	6.44	14.0
Providence *a*	60	12	33.2	6.14	16.0
Providence *c*	60	10	31.4	5.32	14.0
South Carolina.					
Allendale	87	26	52.0	4.19	
Anderson†				2.02	
Batesburg	83	20	53.0	2.40	T.
Blackville†	88	23	52.4	1.60	T.
Camden†				2.24	0.1
Central†	84	19	49.6	1.09	T.
Cheraw *a*†	84	22	50.8	1.43	
Cheraw *b*†				1.67	T.
Columbia					0.2
Conway†				2.05	
Darlington (near)				2.09	T.
Edisto				2.57	
Effingham†				1.94	T.
Florence†	84	27	53.3	2.06	
Georgetown†	85	29	54.6	2.20	
Gillisonville†	93	34	56.5	2.78	
Greenville†	79	26	49.4	1.86	T.
Greenwood†				1.65	
Holland†	78	22	49.6	2.04	
Kingstree *a*†	88	28	54.7	2.46	
Kingstree *b*†				2.41	
Little Mountain	85	28	54.4	2.98	T.
Longshore†	82	24	51.8	2.62	T.
Mount Carmel†				2.40	T.
Pinopolis *[1]	84	32	54.4	2.82	
Port Royal†	80	34	56.5	2.79	
St. George†	86	30	53.8	2.70	
St. Matthews†	86	22	51.5	1.40	
St. Stephens†				2.87	

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
South Carolina—Cont'd.	°	°	°	*Ins.*	*Ins.*
Santuck†	79	22	50.2	1.64	
Shaws Fork *[1]	92	28	55.3	T.	T.
Smiths Mills†				1.52	
Society Hill†	82	25	52.3	1.19	1.5
Spartanburg†	81	24	51.6	1.69	T.
Statesburg†	84	30	53.8	1.69	T.
Trenton	80	31	53.5	2.29	0.5
Trial†	86	25	54.4	3.02	
Winnsboro	82	24	53.0	0.80	T.
Yemassee†	89	27	55.5	2.96	
Yorkville	78	26	51.4	1.55	
South Dakota.					
Aberdeen†	58	—28	17.8	4.42	12.8
Alexandria†	68	—12	21.4	4.02	12.0
Ashcroft†	74	—29	25.6	1.34	10.0
Brookings†	57	—18	21.6	0.52	
Castlewood†	60	—24	19.8	1.54	4.0
Clark†	57	—23	20.1	1.96	11.2
Cross†	68	—16	25.8	1.28	16.2
Edgemont				0.36	
Farmingdale				0.38	
Faulkton†	59	—23	17.7	1.34	
Flandreau†	52	— 8	23.0	3.85	22.8
Forestburg†	75	—11	23.8	3.23	14.3
Forest City†	70	—30	21.0		8.0
Fort Meade	72	—14	25.6	3.43	18.2
Gary†	54	—13	18.7	4.15	28.0
Goudyville *† [1]	59	—15	19.2	0.91	3.1
Greenwood	71	— 1	30.6	1.51	6.0
Highmore†	70	—13	20.3	0.85	6.5
Hotch City†	79	—15	24.0	0.52	4.0
Huron					6.0
Ipswich *† [1]	56	—12	15.5	8.70	
Kimball†	76	— 8	25.1	1.01	5.0
Leslie†	78	—21	26.1	0.19	1.7
Millbank†	52	—24	16.6	0.50	3.0
Mitchell†	71	—10	25.8	1.54	3.7
Northville *[1]	58[e]	—20	18.6[e]	0.30	3.0
Nowlin†	81	—14	25.1	0.72	6.0
Oelrichs†	83	—20	32.8	1.70	17.0
Parker†	62	— 7	26.1	3.00	16.0
Parkston†	69	—12	25.6	1.81	5.0
Pierre					7.6
Plankinton†	78	— 7	25.4	1.62	11.5
Rapid City					14.2
Rochford				3.17	
Rosebud†	86	—17	27.9	2.40	16.0
Shiloh	68	—18	25.3	0.25	
Sioux Falls†	59	—11	24.6	1.85	8.5
Tyndall	70	—10	33.6	1.50	6.0
Vermilion	86	0	29.9	0.49	2.5
Watertown†	68	—16	22.6	0.84	4.0
Webster†	50	—32	15.8	1.80	7.0
Wentworth†	58	—12	21.8	2.75	7.5
Wessington Springs†	73	—10	23.2	1.06	8.0
Yankton†	63	— 3	27.7	1.59	
Tennessee.					
Andersonville *[1]	78	21	44.0	6.17	1.0
Ashwood *† [1]	78	24	47.0	5.52	T.
Benton (near)				4.15	T.
Bluff City†				5.53	1.0
Bolivar†	80	23	47.8	5.58	1.4
Bristol†	76	14	39.7	7.87	5.0
Byrdstown†	81	17	42.9	9.50	4.0
Carthage†				6.51	
Charleston†				3.84	
Charlotte†				6.91	T.
Chattanooga					T.
Clarksville†	75	30	43.3	7.57	T.
Clinton†				6.27	2.0
Cookeville†	83	16	44.2	7.80	
Covington†	80[e]	27[4]	46.5[4]	5.17	2.0
Decatur†	83	22	46.4	5.99	
Dyersburg†	73	23	46.2	6.07	T.
Elizabethton†	82	18	42.1	4.42	8.0
Fairmount *[1]	78[6]	23	42.9[6]	4.39	
Florence	79	22	45.0	7.88	T.
Franklin†	79	19	44.0	7.18	0.5
Greeneville†	80	18	43.4	5.08	1.0
Hohenwald *† [2]		24	43.1	7.17	T.
Jackson†	75	26	46.9	4.74	
Johnsonville†	74	19	46.6	6.48	T.
Jonesboro *† [1]	78	19	42.8	3.80	
Kingston				5.41	T.
Knoxville					0.8
Liberty†	80	24	46.4	7.83	T.
Loudon†				6.30	T.
Lynnville *[1]	78	23	46.2	9.73	T.
McKenzie *[1]	71	23	45.0	4.30	
McMinnville†	81	21	46.4	10.48	T.
Memphis					3.3
Molino†	81	30[1]	47.4[4]		
Nashville					0.3
Newport *[2]	84	24	43.1	4.57	2.0
Nunnelly *[1]	76	23	47.0	6.13	4.0
Palmetto†	80	23	48.0	6.26	T.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Tennessee—Cont'd.	°	°	°	*Ins.*	*Ins.*
Riddleton†	78	21	45.2	8.29	0.3
Rockwood†				4.93	
Rogersville†	79	20	43.1	6.88	1.5
Rugby *[1]	77[4]	16[4]	42.3[4]	7.62	3.6
St. Joseph†	80	17	48.2	8.20	0.5
Savannah	79	26	50.0	9.53	4.0
Sewanee†	77	17	45.0	6.27	
Strawberry Plains†				5.53	0.5
Trenton	74	22	45.1	6.94	T.
Tullahoma†	78	20	46.5	5.85	1.0
Union City	71	21	44.6	7.05	2.0
Waynesboro *[1]	78	21	46.7	6.12	T.
Texas.					
Abilene					T.
Albany *† [1]	78	26	49.8	0.14	
Amarillo					1.2
Angleton	85	37	64.4	5.75	
Arthur City†				2.63	
Aurora *[1]	93	27	55.9	1.82	
Austin *a*†	83	33	57.2	0.40	
Austin *b* *[5]	77	29	54.9		
Ballinger†	86	26	53.9	0.04	
Beeville†	94	38	62.8	1.35	
Boerne *† [1]	79	34	58.5	0.83	
Brazoria†	81	38	62.9	4.05	
Brenham†	84	34	60.0	3.29	
Brownwood *[1]	87	28	58.0	0.92	
Burnet *† [1]	80	28	56.1	0.98	
Camp Eagle Pass†	92	32	63.4	0.00	
Chillicothe	88	21	51.4	0.20	2.0
Coleman *[3]		28	52.8	0.20	
College Station	86	31	58.4	2.32	
Columbia†	84	38	62.0	4.08	
Corsicana *a*†	86[e]	27[e]	55.4[4]	1.33	
Corsicana *b*†	86	28	54.9	1.27	
Cuero†	85	36	61.6	1.44	
Dallas†	87	27	53.3	2.61	
Danevang	85	35	61.7	3.13	
Devine	88	33	61.2	0.25	
Dublin†	84	25	53.6	0.04	
Durham				T.	
Duval *[1]	82	34	60.6	0.95	
Elpaso					T.
Estelle†	90	25	54.8	1.93	
Forestburg†	86	30	53.0	0.34	
Fort Brown†	92	40	68.4	0.35	
Fort Clark		35		T.	
Fort McIntosh	96	39	66.2	0.10	
Fort Ringgold†	105	34	69.4	0.00	
Fort Stockton†					0.00
Fort Worth[5]	88	29	56.4	1.59	
Fredericksburg *† [1]	83[4]	29	56.6	1.36	
Georgetown *[1]	86	28	56.2	0.49	
Golindo				0.95	
Graham†	91	21	53.6	0.49	
Grapevine†	89	29	54.9	1.94	
Hale Center†	81	23	48.6	0.12	1.2
Hallettsville†	84	36	61.3	5.15	
Happy†	88	12	43.9	0.15	1.5
Hartley†	80	5	39.7	0.02	0.2
Haskell†	90	25	49.8	T.	
Hewitt				0.50	
Houston†	84	37	61.0	8.58	
Huntsville†	84	32	58.1	2.08	
Kent				0.03	
Kerrville†	82	26	55.7	0.30	
Lampasas†	86	26	57.5	0.82	
Leakey†	90	30	60.9	T.	
Llano *† [5]	83	31	57.5	1.00	
Longview†	85	28	55.8	2.82	
Luling†	85	33	60.1	1.54	
Marshall†	82	32	52.2	5.15	
Menardville *† [3]	87	27	52.6	0.00	
Midland†	99	22	57.8	0.00	
Mount Blanco *† [1]	89	24	46.7	0.10	1.0
New Braunfels† [6]	79	30	56.6	0.33	
Orange†	77	31	58.8	3.28	
Panter				1.89	
Paris†	85	25	51.8	2.19	
Point Isabel *[1]	86	54	70.1	0.25	
Rheinland *[1]	90	29	51.2	0.23	
Roby†	94	30	51.7	0.11	
Rockport *[1]	80	40	62.9		
Rocksprings†				T.	
Runge†	86	35	61.7	0.42	
San Antonio	88	36	61.4	0.52	
San Marcos *a*†				1.43	
Sierra Blanca†	83	29	58.5	0.00	
Stafford†	87	34	61.8	7.47	
Sulphur Springs†	89	36	53.5	3.46	
Temple†	82	29	54.7	1.32	
Twohig†	98	35	68.4	0.03	
Tyler†	85	28	53.5	2.32	
Victoria				3.83	
Waco†	85	33	56.4	0.78	
Weatherford†	89	26	53.4	1.07	

TABLE II.—*Meteorological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Utah.	°	°	°	*Ins.*	*Ins.*
Alpine City†	.....	.....	.....	1.58	14.0
Blue Creek *§	60	27	37.7	1.00	9.0
Brigham City	.....	.....	.....	2.99	.....
Castlegate†	80	5	36.5	0.58	5.8
Cisco†	82	8	43.2	T.	T.
Corinne *§	68	15	43.1	1.42	9.5
Deseret†	79[a]	10[a]	41.0[a]	0.29	.....
Fillmore†	79	13	43.0	0.94	.....
Fort Duchesne†	74	6	35.1	0.14	1.2
Giles	84	5	43.8	T.	.....
Grover†	65	— 3	36.6	0.50	6.8
Heber	70	— 7	31.6	2.46	17.8
Huntsville†	.....	.....	.....	3.46	17.0
Kelton *§	68	8	38.7	0.75	2.5
Koosharem	67	— 2	33.9	0.30	.....
Levan†	71	10	38.0	1.49	8.5
Loa†	71	— 3	33.0	0.15	1.5
Logan†	65	3	35.4	1.73	4.1
Mammoth	66	6	36.3	0.19	8.5
Manti†	82	8	40.4	0.60	6.0
Millville†	.....	.....	.....	2.69	.....
Moab†	88	15	47.0	0.18	T.
Mount Pleasant *†	70	11	36.9	0.93	3.0
Ogden *§	70	12	39.0	2.87	17.2
Orton	71	5	32.1	0.50	5.0
Pahreah †[l]	78	12[a]	48.1	0.30	3.0
Park City†	52	0	26.0	1.01	.....
Parowan†	75	4	40.2	0.71	5.1
Promontory *§	66	0	37.3	.....	3.0
St. George†	86	15	47.3	0.15	.....
Salt Lake City	.....	.....	.....	.....	9.0
Scipio †[c]	75	3	38.7	1.51	10.0
Snowville†	65	— 2	34.1	1.39	6.0
Soldier Summit†	65	— 7	27.0	1.47	14.8
Terrace *§	64	9	33.8	0.95	4.5
Thistle†	68	8	40.8	1.75	17.5
Tooele†	69	16	39.0	1.09	10.9
Vernal†	58[b]	12[b]	34.2[b]	0.38	1.8
Vermont.					
Brattleboro	57	— 5	28.1	5.89	32.8
Burlington†	55	— 6	25.5	3.54	37.0
Chelsea†	51	— 6	20.7	5.44	48.0
Cornwall	60	— 7	22.5	3.14	23.0
Enosburg Falls†	56	—17	23.6	6.26	42.0
Hartland†	52	—14	24.8	7.09	34.0
Irasburg†	.....	.....	.....	5.96	32.5
Jacksonville	49	—13	20.3	5.68	42.0
Northfield	.....	.....	.....	.....	42.5
Norwich	51	—10	23.2	5.75	31.0
St. Johnsbury	51	—15	22.3	4.33	21.5
Strafford *†	45	— 2	22.1	4.85	40.0
Vernon *§	54	— 4	28.3	6.03	24.0
Wells	50	— 5	24.0	6.24	42.0
Woodstock	55	—14	24.6	4.68	34.0
Virginia.					
Alexandria	64	14	37.9	.....	.....
Alleghaney *[l]	59	12	33.6	.....	.....
Ashland†	73	15	40.0	4.12	0.5
Avon†	70	16	42.6	5.55	7.0
Bedford City†	68	21	42.7	5.13	.....
Bigstone Gap†	76	9	38.6	12.73	11.6
Blacksburg	69	14	38.5	6.53	8.7
Callaville†	75	30	45.0	4.08	1.5
Cape Henry	.....	.....	.....	.....	0.1
Charlottesville	73	18	43.1	4.95	3.5
Christiansburg†	.....	.....	.....	6.36	4.0
Clarksville†	.....	.....	.....	4.16	.....
Dale Enterprise†	69	— 1	35.9	3.70	11.0
Danville	.....	.....	.....	3.79	3.0
Fredericksburg†	71	18	41.6	3.85	1.5
Grahams Forge	72	11	40.1	6.06	2.5
Hampton	74	27	45.2	1.55	0.8
Hot Springs	70	8	38.2	5.80	0.6
Irwin†	72	14	42.4	4.57	1.5
Lexington†	71	15	40.9	4.97	9.0
Lynchburg	.....	.....	.....	.....	6.8
Maldens	74	22	48.7	.....	.....
Manassas†	70	12	40.0	4.25	3.0
Marion †	72[a]	12[a]	40.4[a]	8.00	2.0
Monterey†	64	2	32.5	3.77	19.0
Norfolk	.....	.....	.....	.....	2.0
Nottoway	76	14	45.6	3.61	1.5
Petersburg†	73	20	44.4	3.33	1.7
Radford†	.....	.....	.....	5.23	6.0
Richmond (near)†	77	18	45.2	3.98	0.5
Rockymount†	72	20	45.2	6.63	3.0
Salem†	71	19	43.0	5.77	3.5
Saltville	74	15	41.3	7.71	0.3
Smithville†	70	18	43.4	4.05	T.
Speers Ferry†	.....	.....	.....	8.11	5.0
Spottsville†	76	21	44.0	2.92	2.0
Stanardsville†	70	12	39.9	2.74	4.6
Staunton†	74	4	39.2	4.41	11.0
Stephens City†	69	5	35.9	3.91	20.0
Sunbeam†	75	23	45.0	3.26	2.5
Warsaw†	75[c]	18[a]	42.3[a]	3.24	1.5

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Virginia—Cont'd.	°	°	°	*Ins.*	*Ins.*
Westbrook Farm	70	20	43.4	.....	.....
Washington.					
Aberdeen†	68	22	43.3	5.51	2.5
Anacortes	.....	.....	.....	1.42	T.
Ashford	.....	.....	.....	3.80	12.0
Blaine†	65	11	38.4	1.90	3.5
Cascade Tunnel	53	— 5	31.8	9.96	75.0
Centerville†	75	11	42.2	0.88	6.0
Chehalis†	70[a]	17	42.5[a]	2.81	0.8
Colfax†	67	— 8	37.9	1.37	3.0
Connell†	78	7	42.0	.....	.....
Coupeville†	62	11	41.4	1.31	T.
East Clallam	.....	.....	.....	.....	T.
Eastsound†	62	20	40.6	2.04	3.0
Ellensburg†	70	5	38.2	0.71	.....
Ellensburg (near)	70	8	38.3	0.50	9.0
Fort Canby	.....	.....	.....	.....	3.3
Fort Simcoe	70	9	41.9	1.24	12.0
Fort Spokane	65	3	37.9	0.23	2.3
Grandmound†	65	17	41.4	3.27	0.1
Hunters†	58	— 4	30.6	0.26	2.0
Kennewick	77	14	46.8	0.41	1.5
Lakeside†	68	9	38.4	0.70	7.0
Lapush†	69	22	43.6	3.80	2.5
Madrone *†	67	20	42.3	3.54	1.0
Mayfield†	.....	.....	.....	4.44	3.0
Montecristo†	48	8	31.4	8.71	86.0
Moxee Valley†	70	2	40.3	0.11	0.9
Neahbay	.....	.....	.....	.....	T.
New Whatcom†	64	18	43.6	2.25	0.5
Olga†	62	21	42.2	1.79	1.5
Olympia†	64	22	43.6	3.59	T.
Pine Hill†	67	12	41.6	2.65	7.2
Pomeroy†	70	8	43.6	1.31	6.7
Port Angeles	.....	.....	.....	.....	4.6
Port Crescent	.....	.....	.....	.....	1.9
Pullman†	66	3	36.2	1.83	3.0
Queets†	68	.....	.....	7.84	.....
Rosalia†	61	3	36.1	0.72	1.9
Seattle	.....	.....	.....	.....	1.2
Shoalwater Bay *[m]	61	22	43.6	.....	.....
Silvercreek *[l]	72	18	40.4	4.02	3.0
Snohomish†	68	15	42.4	3.08	3.0
Southbend†	70	22	42.6	5.84	2.0
Spokane	.....	.....	.....	.....	4.0
Stillaguamish†	65	9	39.0	1.58	0.8
Sunnyside†	72	7	41.9	0.30	0.8
Tacoma†	67	18	42.0	2.88	2.0
Tatoosh Island	.....	.....	.....	.....	0.2
Union City†	72	20	43.3	2.98	3.0
Vashon†	66	12	42.0	2.53	0.2
Walla Walla	.....	.....	.....	.....	1.1
Waterville†	61	— 1	33.3	0.70	7.0
Wenatchee Lake†	58	— 6	32.2	.....	.....
West Ferndale†	63	17	42.4	2.94	4.0
West Virginia.					
Beverly†	76	4	36.5	6.41	24.0
Bloomery†	62	—10	30.8	3.02	23.0
Bluefield†	67	10	39.5	6.38	6.2
Buckhannon *a†	.....	.....	.....	5.09	24.0
Buckhannon *b*	67[a]	1	34.2[a]	.....	.....
Burlington	67	— 4	33.9	3.60	29.0
Charleston†	.....	.....	.....	6.00	9.0
Creston	69	3	35.8	4.54	18.0
Dayton	.....	.....	.....	4.07	19.5
Elkhorn†	67	15	41.3	8.40	12.5
Ella†	64	9	32.4	3.66	14.0
Fairmont†	.....	.....	.....	4.48	22.0
Glenville†	68	4	35.6	5.13	24.5
Grafton†	67	0	33.4	4.70	27.6
Green Sulphur	68	10	39.4	4.51	7.0
Harpers Ferry†	.....	.....	.....	2.48	11.6
Hewett†	74	14	39.4	6.67	8.0
Hinton *a†	.....	.....	.....	5.46	9.0
Hinton *b†	70	15	40.6	.....	7.4
Leachtown†	.....	.....	.....	3.52	12.6
Marlinton†	68	6	34.8	6.99	14.2
Martinsburg†	70	— 1	32.0	2.58	30.5
Morgantown *a†	.....	.....	.....	4.29	22.4
Morgantown *b†	70	— 4	33.4	3.35	21.8
New Martinsville†	69	4	35.8	3.90	17.0
Nuttallburg†	68	5	31.3	6.00	22.0
Oldfields†	70	— 6	34.4	3.27[n]	19.8
Parkersburg	.....	.....	.....	.....	22.0
Pennsboro	70	1	34.8	3.46	16.5
Philippi†	66	3	37.1	5.53	32.5
Point Pleasant†	70	7	37.4	4.76	21.0
Powellton†	73	12	38.8	6.48	16.0
Rowlesburg†	.....	.....	.....	1.76	7.5
Sandyville†	71	— 1	35.2	3.86	15.0
Spencer †	67	0	37.4	4.66	32.5
Tannery *[l]	60	7	32.1	.....	23.5
Weston *a*	.....	.....	.....	4.61	23.0
Weston *b* *[l]	68	8	36.2	.....	28.0
Wheeling *a†	.....	.....	.....	3.39	16.4
Wheeling *b†	72	9	36.4	3.65	17.0

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
West Virginia—Cont'd.	°	°	°	*Ins.*	*Ins.*
White Sulphur Springs	72	6	37.8	.....	7.0
Wisconsin.					
Amherst	58	— 9	24.2	1.15	2.0
Antigo †	56	—16	22.4	1.07	7.4
Apollonia *†	55	—12	24.6	2.04	14.0
Bayfield	52	— 2	21.6	0.75	7.5
Beloit	66	— 4	28.4	1.49	8.5
Boscobel†	62	—12	28.6	1.40	8.3
Butternut†	55	—22	20.6	1.70	16.4
Centralia	60	— 8	24.6	0.80	2.0
Chilton	58	— 6	28.1	1.51	2.2
Citypoint	60	.....	.....	0.90	4.8
Crandon†	45	—15	19.9	1.00	10.0
Delavan†	60	— 6	27.7	1.51	.....
Depere†	57	— 2	25.2	1 96	5.3
Eau Claire	60	— 5	25.2	0.60	2.0
Florence†	50	—10	18.8	1.18	7.0
Fond du Lac†	57	—11	25.0	1.52	6.5
Grand River Lock	.....	.....	.....	0.56	3.0
Grantsburg†	47	—15	21.2	2.57	13.5
Greenbay	.....	.....	.....	.....	3.7
Hartford	.....	.....	.....	2.33	3.0
Harvey†	58	— 3	28.6	1.41	3.6
Hayward†	48	—21	19.0	1.95	18.6
Hillsboro	63	—12	25.8	0.35	3.5
Koepenick *†	48	—10	18.4	1.05	6.5
La Crosse	.....	.....	.....	.....	2.2
Lancaster†	65	— 6	27.0	1.41	7.5
Lincoln †‡	.....	.....	27.6	1.73	3.0
Madison†	57	— 4	27.2	0.78	2.4
Manitowoc†	56	— 1	27.0	1.35	2.8
Meadow Valley†	61	— 9	25.4	0.51	.....
Medford†	57	—18	25.1	0.95	3.5
Menasha	.....	.....	.....	1.01	5.0
Milwaukee	.....	.....	.....	.....	8.4
Neillsville†	58	—12	24.1	0.95	.....
New Holstein†	45	— 5	26.2	1.38	3.8
New London	58	— 7	23.9	1.48	3.0
Oconomowoc†	58	— 4	26.8	1.30	2.0
Oconto	61	— 2	26.0	1.79	5.0
Osceola†	62	—14	24.2	2.34	10.7
Oshkosh†	57	— 2	26.7	1.36	6.9
Pepin	58	— 9	25.2	1.84	6.0
Pine River†	61	—12	25.6	0.70	5.4
Portage	62	— 4	27.5	0.35	T.
Port Washington	55	— 8	29.8	2.30	9.0
Prairie du Chien	66	—12	27.2	0.94	4.5
Sharon†	64	— 3	26.8	1.73	4.5
Shawano	57	— 6	24.5	1.40	6.5
Spooner†	51	—20	21.4	3.20	19.8
Stevens Point†	59	—12	25.3	0.38	1.2
Valley Junction†	62	—10	26.4	0.57	2.5
Viroqua	59	— 9	26.6	0.79	4.8
Watertown†	59	— 4	27.6	1.70	3.5
Waukesha†	58	— 2	28.2	1.82	3.0
Waupaca	.....	— 8	.....	1.23	3.5
Wausau †	55	—10	23.2	1.19	3.2
Westbend	54	— 2	26.4	2.03	5.1
Westfield†	58	— 4	26.4	0.45	2.5
Whitehall†	62	—15	25.9	1.75	2.0
Wyoming.					
Bighorn Ranch†	56	—26	25.2	0.75	8.0
Cheyenne	.....	.....	.....	.....	20.6
Embar†	59	—25	23.3	2.60	26.0
Fort Laramie†	70	—20	30.4	1.14	11.4
Fort Washakie	65	—20	28.8	1.62	16.2
Fort Yellowstone†	50	—21	24.9	2.62	20.8
Lander (W. B.)	.....	.....	.....	.....	25.6
Laramie	62	—21	26.2	0.59	.....
Lusk†	70	—24	26.5	1.43	.....
Sheridan	69	—14	27.6	1.65	16.5
Sundance	56	—15	24.3	4.50	44.0
Wheatland†	72	0	31.9	1.40	14.0
Mexico.					
Ciudad P. Diaz	90	36	64.8	0.08	
Leon de Aldamas	88	42	65.4	T.	
Mexico	84	40	61.8	0.04	
Puebla	89	40	64.0	0.00	
Topolobampo *[l]	94	58	70.2	0.00	
New Brunswick.					
St. John	46	8	28.0	3.95	11.6
West Indies.					
Grand Turk Island	.....	.....	.....	1.37	

EXPLANATION OF SIGNS.

* Extremes of temperature from observed readings of dry thermometer.

† Weather Bureau instruments.

‡ Record furnished by the Arrowhead Reservoir Company, in the San Bernardino Mountains, San Bernardino County, Cal., at elevations varying from 4,900 to 6,900 feet.

TABLE III.—*Data from Canadian stations for the month of March*, 1896.

Stations.	Pressure.			Temperature.		Precipitation.		Prevailing direction of wind.	Total depth of snow.
	Mean not reduced.	Mean reduced.	Departure from normal.	Mean.	Departure from normal.	Total.	Departure from normal.		
	Inches.	*Inches.*	*Inches.*	°	°	*Inches*	*Inches.*		
St. Johns, N. F	29.74	29.89	+ .06	30.6	+ 2.8	5.59	.....	n.	11.7
Sydney, C. B. I	29.78	29.84	— .08	29.2	+ 3.2	6.89	+ 1.64	sw.	10.5
Grindstone, G. St. L.	29.72	29.76	.....	24.6	.....	6.74	.....	w.	....
Sandy Point	29.75	29.77	.....	22.1	... .	2.37	.....	nw.	....
Halifax, N. S	29.74	29.88	— .01	31.6	+ 3.1	8.78	+ 2.92	w.	15.5
Grand Manan, N. B.	29.78	29.83	.....	28.8	.....	4.19	+ 0.04	w.	13.9
Yarmouth, N. S.	29.75	29.83	— .05	32.0	+ 1.0	6.99	+ 2.13	nw.	15.6
St. Andrews, N. B.	.....	.....	.....	27.2	.....	5.01	+ 0.62	nw.	24.2
Charlottet'n, P. E. I.	29.77	29.81	....	27.3	.....	4.46	+ 1.05	sw.	17.3
Chatham, N. B	29.80	29.82	— .08	22.8	+ 1.8	4.66	+ 0.42	w.	28.2
Father Point, Que.	29.82	29.85	— .05	18.2	— 1.3	5.12	+ 2.66	w.	35.1
Quebec, Que	29.54	29.89	— .06	18.4	— 1.6	3.43	— 0.48	w.	20.6
Montreal, Que	29.72	29.94	— .02	19.8	— 2.2	6.73	+ 3.04	nw.	39.5
Rockliffe, Ont	29.47	30.02	+ .04	12.8	— 3.2	1.11	— 1.18	nw.	8.7
Kingston, Ont	29.66	30.00	.00	20.6	— 3.4	3.02	— 0.04	ne.	....
Toronto, Ont	29.65	30.06	+ .03	22.8	— 2.7	2.47	— 0.13	nw.	11.4
White River, Ont	28.64	30.10	.....	3.8	— 9.2	1.45	+ 0.30	n.	14.3
Port Stanley, Ont	29.40	30.08	+ .05	23.7	.....	2.94	— 0.01	w.	16.9

TABLE III.—*Data from Canadian stations*—Continued.

Stations.	Pressure.			Temperature.		Precipitation.		Prevailing direction of wind.	Total depth of snow.
	Mean not reduced.	Mean reduced.	Departure from normal.	Mean.	Departure from normal.	Total.	Departure from normal.		
	Inches.	*Inches.*	*Inches.*	°	°	*Inches*	*Inches.*		
Saugeen, Ont	29.31	30.07	+ .05	20.2	— 2.8	2.31	— 0.24	w.	16.9
Parry Sound, Ont.	29.30	30.04	+ .02	16.0	— 2.5	1.29	— 1.33	n.	10.7
Port Arthur, Ont	29.42	30.06	— .02	14.8	+ 0.8	0.76	— 0.41	nw.	6.4
Winnipeg, Man	29.22	30.11	— .01	9.6	— 0.9	1.85	+ 0.83	n.	11.5
Minnedosa, Man	28.16	30.09	.00	10.9	+ 0.9	1.28	+ 0.62	e.	12.8
Qu'Appelle, Assin.	27.70	30.10	+ .03	11.9	— 3.1	0.88	+ 0.24	se.	8.8
Medicine Hat, Assin	27.64	30.05	+ .02	22.3	— 5.2	1.01	+ 0.40	w.	8.5
Swift Curr't, Assin.	27.36	30.08	— .02	18.2	— 4.8	0.42	— 0.40	w.	4.1
Calgary, Alberta	26.32	30.03	— .01	18.2	— 8.8	1.13	+ 0.37	w.	11.3
Prince Albert, Sask.	28.50	30.12	.....	11.0	.....	1.49	.....	e.	14.9
Edmonton, Alberta.	27.62	30.07	+ .09	19.0	— 7.0	1.20	+ 0.55	nw.	10.4
Battleford, Sask	28.24	30.08	.....	13.0	.....	0.86	.....	se.	8.6
Spences Br'ge, B. C.	29.18	30.02	.....	37.6	.....	0.14	.....	w.	0.0
Hamilton, Bermuda	29.90	30.06	— .02	62.2	.....	8.39	.....	nw.	
Banff, Alberta	.....	.....	.....	19.6	.....	0.94	.....	sw.	....
Esquimalt, B. C.	30.02	30.05	... .	40.0	.....	1.71	.....	sw.	0.3
Ottawa, Ont	29 62	30.00	.....	17.6	.....	3.37	.....	w.	...

TABLE IV.—*Meteorological observations at Honolulu, Republic of Hawaii, by Curtis J. Lyons, Meteorologist to the Government Survey.*

Pressure is corrected for temperature and reduced to sea level, but the gravity correction, —0.06, is still to be applied.

The absolute humidity is expressed in grains of water, per cubic foot, and is the average of four observations daily.

The average direction and force of the wind and the average cloudiness for the whole day are given unless they have varied more than usual, in which case the extremes are given. The scale of wind force is 0 to 10. Two directions of wind, connected by a dash, indicate change from one to the other; also same for force.

The rainfall for twenty-four hours is given as measured at 6 a. m. on the respective dates.

March, 1896.	Pressure at sea level.			Temperature.					Humidity.			Wind.		Cloudiness.	Rain measured at 6 a. m.
	9 a. m.	3 p. m.	9 p. m.	6 a. m.	2 p. m.	9 p. m.	Maximum.	Minimum.	Relative. 9 a. m.	Relative. 9 p. m.	Absolute.	Direction.	Force.		
	Ins.	*Ins.*	*Ins.*	°	°	°	°	°	%	%					*Ins.*
1 ..	30.04	29.95	30.01	70	78	68	81	67	81	96	7.7	s.	1	5	0.00
2 ..	30.03	29.95	29.99	66	70	66	77	65	85	96	7.1	s-w.	2	3-10	0.84
3 ..	29.95	29.88	29.93	66	71	65	72	64	97	96	6.8	e-w.	0	10	2.26
4 ..	29.92	29.87	29.96	62	77	67	78	61	78	90	6.7	wsw.	3	3	0.16
5 ..	30.00	29.92	30.02	63	78	66	80	62	77	94	6.6	wsw.	3	3	0.00
6 ..	30.05	29.99	30.07	68	75	67	77	64	78	95	7.2	n.	3	10	0.03
7 ..	30.09	30.03	30.11	68	74	71	76	65	76	67	6.0	nne.	4	5	0.34
8 ..	30.11	30.02	30.10	70	76	71	77	65	63	71	5.7	ne.	4	3	0.01
9 ..	30.19	30.09	30.16	66	76	69	76	66	64	76	5.6	ne.	3	3	0.00
10 ..	30.14	30.06	30.10	69	76	73	78	65	60	66	5.8	ne.	4	3-8	0.00
11 ..	30.10	30.03	30.08	70	76	69	77	70	67	76	6.0	ne.	3	2	0.02
12 ..	30.06	30.00	30.10	61	76	66	78	61	66	85	5.8	e-s.	2	2	0.00
13 ..	30.12	30.05	30.12	63	69	68	78	62	77	90	6.6	s-n.	2	4-10	0.00
14 ..	30.12	30.04	30.08	66	73	64	74	63	55	70	4.6	n.	3	1	1.00
15 ..	30.07	29.97	30.03	60	72	65	74	59	63	70	4.8	n.	3	4	0.00

TABLE IV.—*Meteorological observations at Honolulu*—Continued.

March, 1896.	Pressure at sea level.			Temperature.					Humidity.			Wind.		Cloudiness.	Rain measured at 6 a. m.
	9 a. m.	3 p. m.	9 p. m.	6 a. m.	2 p. m.	9 p. m.	Maximum.	Minimum.	Relative. 9 a. m.	Relative. 9 p. m.	Absolute.	Direction.	Force.		
	Ins.	*Ins.*	*Ins.*	°	°	°	°	°	%	%					*Ins.*
16 ..	29.98	29.91	29.97	60	72	64	75	59	71	82	4.9	n.	3	4	0.01
17 ..	30.04	29.92	30.03	62	76	67	76	60	70	75	5.6	nne.	4	3	0.01
18 ..	30.08	30.00	30.07	67	76	64	76	65	66	80	5.7	nne.	5	4	0.04
19 ..	30.10	30.03	30.10	66	74	69	74	65	70	70	5.7	nne.	5	3	0.39
20 ..	30.14	30.10	30.18	66	74	70	76	64	45	53	4.4	nne.	6-4	3	0.00
21 ..	30.16	30.08	30.13	69	72	63	73	64	70	95	5.0	nne.	4	8	0.00
22 ..	30.13	30.06	30.12	67	69	67	73	63	69	74	5.2	ne.	3	6	0.26
23 ..	30.12	30.03	30.13	65	74	67	75	63	56	71	5.0	ne.	4	4	0.15
24 ..	30.18	30.10	30.22	66	72	66	73	64	73	80	5.6	ene.	6	5	0.09
25 ..	30.22	30.13	30.22	68	72	70	73	64	67	87	4.9	nne.	6	6-9	0.33
26 ..	30.23	30.13	30.21	65	74	68	74	64	66	76	5.4	ne.	5-7	6	0.08
27 ..	30.18	30.14	30.20	70	70	70	72	66	65	68	5.5	ne.	6	10	0.23
28 ..	30.16	30.08	30.14	67	76	70	76	65	69	69	5.7	ne.	4-6	3	0.32
29 ..	30.14	30.05	30.15	70	76	72	77	68	58	68	5.7	ne.	4	3	0.05
30 ..	30.14	30.06	30.15	71	76	72	76	70	72	68	6.1	ene.	4	8-10	0.02
31 ..	30.11	30.02	30.11	71	74	72	75	71	69	73	6.1	ne.	4	9	0.05
	30.10	30.02	30.10	66.4	74.0	68.0	75.7	64.3	69.0	77.3	5.8	.....	4.0	5.5	6.50

Mean temperature: 6+2+9+3 is 69.5; the normal is 71.0; extreme temperatures, 81° and 59°. A thunderstorm from the west occurred on the 2d at 4 p. m. Lunar halos occurred on the 18th and 23d. Severe north gales throughout group from 23d to 28th; 14th-21st, unusual north winds, low dewpoint, etc., probably great storm passed through North Pacific, in high latitudes.

TABLE V.—*Mean temperature for each hour of seventy-fifth meridian time, March*, 1896.

Stations.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Mean.
Bismarck, N Dak.....	15.3	14.6	14.1	13.9	13.4	12.6	11.9	11.9	11.9	13.8	16.6	19.6	21.5	23.3	24.1	25.2	25.9	25.4	24.6	22.7	20.5	19.3	18.2	17.0	18.2
Boston, Mass.	29.5	29.0	28.3	28.0	27.4	27.4	27.8	29.3	30.6	32.0	33.0	34.2	34.8	35.3	35.8	35.3	34.8	34.0	32.9	32.5	31.6	31.4	30.6	30.2	31.5
Buffalo N Y	24.6	24.3	24.2	24.0	23.3	23.0	22.4	22.4	23.0	24.0	24.7	25.1	27.1	28.1	28.6	28.8	28.7	28.0	27.1	26.3	26.0	25.8	25.6	25.3	25.5
Chicago, Ill.....	30.5	29.6	29.2	28.6	28.4	28.0	27.8	27.8	28.5	29.4	30.2	31.2	32.0	32.8	32.9	33.3	33.9	33.9	33.2	33.2	32.8	32.4	32.0	31.7	31.0
Cincinnati, Ohio.....	35.3	34.7	34.1	33.5	33.1	32.6	32.4	32.5	33.3	34.6	36.4	38.0	39.4	40.3	40.9	41.5	41.5	41.4	40.7	40.0	39.2	38.3	37.5	36.7	37.0
Cleveland, Ohio	28.9	28.7	28.1	27.5	26.9	26.6	26.6	26.9	27.7	28.8	29.9	30.7	31.9	32.1	32.7	32.5	32.7	32.7	32.2	31.7	31.4	30.7	30.3	30.0	29.9
Detroit, Mich.....	27.4	26.9	26.3	25.9	25.2	24.5	24.3	24.9	26.4	27.7	29.1	30.2	31.3	32.4	32.9	33.4	33.5	32.6	31.2	30.6	29.7	29.0	28.5	28.2	28.8
Dodge City, Kans.....	34.9	33.7	32.2	31.4	30.4	29.6	28.4	27.7	29.3	35.1	40.4	44.6	47.5	49.7	50.7	51.6	51.6	51.0	49.2	45.7	42.3	39.8	37.8	36.5	39.6
Eastport, Me.....	26.3	26.0	25.7	25.4	25.0	24.8	25.1	25.7	26.8	27.7	29.1	30.2	30.8	31.1	31.2	31.3	31.0	30.4	29.7	29.2	28.5	27.9	27.3	26.7	28.0
Galveston, Tex.....	60.1	60.0	59.7	59.4	59.3	59.1	58.9	59.0	59.0	59.6	60.2	61.1	61.9	62.6	63.2	63.4	63.1	62.5	62.1	61.1	61.0	60.8	60.7	60.4	60.8
Havre, Mont.....	22.3	21.6	21.3	20.6	19.6	18.9	18.3	17.8	17.5	19.2	22.2	24.1	26.9	28.8	30.2	31.3	31.7	32.2	31.6	30.3	27.3	25.6	24.6	23.6	24.5
Kansas City, Mo.....	35.8	35.0	34.3	33.1	32.3	31.7	31.4	31.1	32.5	34.1	36.2	38.5	40.5	42.6	44.8	45.8	46.4	45.7	44.3	42.7	40.8	39.5	38.3	37.2	38.1
Key West, Fla.....	68.6	68.6	68.5	68.3	68.1	68.0	68.1	69.2	70.0	70.6	71.3	71.9	72.4	72.4	72.4	72.1	72.0	71.3	70.4	69.8	69.8	69.6	69.4	69.2	70.1
Memphis, Tenn.*.....	45.9	45.3	44.4	43.9	43.8	43.4	43.0	42.8	42.8	43.7	44.7	45.7	47.4	48.4	49.7	50.4	51.0	51.1	50.8	50.5	49.7	49.0	48.2	47.4	46.8
New Orleans, La.....	57.7	57.3	56.5	55.7	55.4	55.2	54.7	54.5	56.0	58.5	61.2	63.4	64.8	65.8	66.5	66.8	66.4	65.9	64.5	63.0	61.5	60.3	59.5	58.8	60.4
New York, N. Y.....	29.4	29.2	28.8	28.3	28.0	27.8	28.2	28.2	29.4	30.9	32.4	33.3	34.2	35.0	35.8	36.1	35.9	34.9	34.0	33.5	32.5	31.8	30.8	30.2	31.6
Philadelphia, Pa.....	32.9	32.5	32.0	31.4	31.1	30.7	31.1	32.7	34.1	35.6	36.9	38.4	39.6	40.1	41.1	41.5	41.3	40.1	38.7	37.5	36.1	35.2	34.3	33.5	35.8
Pittsburg, Pa.....	32.0	31.6	30.9	30.6	30.3	30.0	29.7	29.9	31.2	32.9	34.7	36.0	37.5	37.9	38.5	39.0	39.1	38.4	37.7	36.8	35.9	35.0	34.0	33.3	34.3
Portland, Oreg.....	43.7	42.9	41.9	41.0	40.2	40.0	39.3	39.4	39.0	39.1	40.0	41.4	43.3	45.4	47.7	49.4	50.7	51.3	51.1	51.1	49.6	48.5	47.1	45.5	44.5
St. Louis, Mo.....	38.6	37.8	36.9	36.1	35.2	34.5	34.3	34.3	35.3	36.7	38.5	40.9	42.8	44.5	45.7	46.3	46.5	45.9	44.8	44.1	42.9	42.1	41.5	40.5	40.3
St. Paul, Minn.....	23.9	23.4	22.6	21.7	20.8	20.0	19.6	19.1	20.1	22.1	24.8	26.8	28.4	29.8	31.1	31.5	32.0	31.4	30.6	29.3	27.8	27.0	26.0	25.1	25.6
Salt Lake City, Utah..	38.1	37.2	36.9	36.2	36.1	35.1	34.8	34.6	34.9	35.9	38.1	41.1	43.2	44.6	45.5	46.3	46.5	46.6	46.2	45.0	43.3	41.5	40.1	39.3	40.3
San Diego, Cal.....	55.6	55.1	54.6	54.2	53.9	53.4	52.7	52.7	52.5	53.3	55.7	57.6	60.6	62.6	64.1	64.2	64.6	64.3	63.9	62.5	60.8	59.2	57.7	56.8	58.0
San Francisco, Cal....	52.4	52.2	51.7	51.4	51.0	50.6	50.4	50.2	49.9	49.9	51.0	52.1	53.6	54.8	56.5	58.1	58.5	58.6	57.8	56.6	54.7	53.8	53.7	53.2	53.4
Savannah, Ga.....	53.0	52.3	51.6	51.1	50.9	50.5	50.5	52.1	55.3	59.3	62.1	63.5	64.7	65.6	65.5	64.4	63.0	60.8	58.2	57.1	56.2	55.6	55.0	54.0	57.2
Washington, D. C....	35.3	34.7	34.0	33.2	32.8	32.5	32.5	33.9	36.2	38.0	39.8	41.7	43.1	44.1	44.8	44.8	44.2	43.0	41.1	40.0	38.6	37.5	36.6	35.8	38.3

*For 25 days.

TABLE VI.—*Mean pressure for each hour of seventy-fifth meridian time, March*, 1896.

Stations.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Mean.
Bismarck, N. Dak...	28.236	.234	.232	.231	.229	.228	.237	.243	.252	.255	.251	.251	.247	.243	.234	.224	.220	.220	.224	.230	.241	.245	.245	.241	.237
Boston, Mass.....	29.755	.745	.739	.741	.747	.756	.772	.777	.779	.775	.769	.757	.744	.735	.729	.729	.740	.749	.756	.767	.777	.776	.779	.772	.757
Buffalo, N. Y.....	29.168	.161	.150	.149	.155	.155	.174	.182	.187	.190	.186	.177	.165	.159	.157	.156	.162	.171	.184	.189	.195	.192	.193	.189	.173
Chicago, Ill.....	29.159	.159	.156	.148	.155	.159	.167	.175	.177	.185	.185	.182	.176	.163	.153	.149	.145	.147	.146	.151	.156	.158	.163	.162	.162
Cincinnati, Ohio ...	29.404	.399	.394	.391	.393	.399	.412	.426	.435	.440	.436	.431	.422	.409	.399	.395	.394	.400	.407	.413	.423	.422	.419	.415	.412
Cleveland, Ohio	29.347	.344	.340	.334	.335	.341	.349	.353	.352	.351	.349	.345	.345	.339	.318	.315	.318	.329	.342	.347	.353	.352	.352	.352	.341
Detroit, Mich.....	29.360	.358	.356	.352	.353	.360	.368	.374	.378	.380	.377	.375	.368	.353	.345	.345	.343	.347	.356	.363	.371	.372	.369	.370	.362
Dodge City, Kans..	27.393	.390	.392	.390	.386	.389	.394	.397	.403	.403	.399	.391	.381	.369	.350	.335	.331	.331	.339	.354	.372	.381	.393	.397	.377
Eastport, Me.....	29.741	.735	.728	.723	.728	.731	.738	.744	.748	.748	.743	.734	.725	.722	.718	.721	.731	.740	.751	.757	.759	.757	.750	.747	.738
Galveston, Tex.....	30.039	.036	.034	.025	.017	.019	.032	.045	.057	.065	.075	.074	.065	.046	.028	.008	.999	.995	.997	.010	.021	.034	.045	.045	.034
Havre, Mont.....	27.345	.344	.347	.343	.342	.339	.341	.344	.358	.365	.368	.370	.368	.362	.351	.342	.333	.327	.322	.322	.329	.335	.345	.351	.346
Kansas City, Mo....	29.055	.053	.055	.051	.047	.049	.058	.066	.077	.082	.081	.075	.061	.044	.022	.010	.002	.001	.008	.019	.028	.040	.047	.054	.045
Key West, Fla.....	30.094	.083	.070	.065	.066	.075	.087	.103	.114	.118	.122	.115	.096	.078	.064	.055	.057	.064	.076	.087	.098	.105	.109	.106	.088
Memphis, Tenn.....	29.653	.647	.643	.636	.634	.641	.651	.663	.679	.690	.695	.693	.682	.666	.645	.632	.624	.623	.626	.635	.645	.653	.658	.657	.653
New Orleans, La....	30.042	.037	.032	.030	.033	.045	.058	.069	.078	.084	.087	.080	.062	.042	.028	.017	.006	.008	.012	.017	.031	.043	.045	.046	.042
New York, N. Y....	29.621	.618	.611	.609	.613	.618	.629	.634	.635	.631	.622	.612	.597	.584	.577	.577	.584	.593	.605	.619	.631	.639	.648	.648	.615
Philadelphia, Pa....	29.879	.873	.867	.869	.872	.878	.890	.894	.900	.896	.886	.878	.864	.849	.840	.835	.837	.847	.860	.875	.888	.896	.900	.904	.874
Pittsburg, Pa.....	29.143	.140	.131	.126	.127	.132	.145	.156	.156	.155	.148	.144	.135	.129	.126	.123	.125	.132	.139	.148	.153	.156	.159	.157	.141
Portland, Oreg.....	29.895	.899	.906	.905	.906	.904	.904	.908	.908	.912	.919	.922	.923	.923	.914	.903	.889	.883	.878	.878	.881	.888	.898	.905	.902
St. Louis, Mo.....	29.470	.473	.475	.472	.474	.485	.497	.509	.515	.518	.517	.508	.498	.476	.457	.451	.445	.442	.449	.455	.462	.470	.472	.474	.478
St. Paul, Minn.....	29.124	.127	.131	.125	.121	.120	.122	.126	.128	.132	.135	.132	.122	.109	.096	.087	.083	.082	.087	.095	.102	.107	.108	.109	.113
Salt Lake City, Utah	25.607	.613	.611	.615	.610	.607	.607	.610	.622	.630	.639	.643	.643	.641	.632	.621	.615	.609	.605	.609	.609	.615	.625	.627	.619
San Diego, Cal.....	29.974	.975	.974	.972	.961	.948	.949	.951	.959	.968	.983	.993	.996	.992	.974	.961	.945	.936	.935	.936	.944	.959	.968	.976	.964
San Francisco Cal..	29.919	.922	.923	.923	.916	.905	.903	.903	.909	.917	.929	.936	.944	.942	.933	.919	.907	.898	.892	.889	.894	.900	.910	.919	.915
Savannah, Ga.....	30.012	.007	.999	.998	.003	.017	.029	.038	.045	.046	.043	.029	.011	.990	.972	.966	.968	.978	.990	.998	.012	.019	.023	.024	.009
Washington, D. C...	29.925	.920	.911	.909	.916	.923	.932	.936	.938	.940	.934	.921	.906	.886	.880	.880	.885	.900	.911	.928	.940	.946	.947	.945	.919

TABLE VII.—*Average wind movement for each hour of seventy-fifth meridian time, March, 1896.*

Stations.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Mean.
Abilene, Tex.	10.3	11.0	11.4	11.3	11.0	10.4	10.5	10.5	10.3	12.8	14.1	14.8	16.0	14.6	14.7	14.1	13.8	14.3	13.1	11.9	10.1	9.6	9.7	10.3	12.1
Albany, N. Y.	9.1	9.2	9.4	9.1	9.7	10.5	10.4	10.4	11.4	12.6	12.9	13.4	13.3	13.4	12.9	13.3	12.7	11.5	11.0	11.0	10.7	9.8	9.7	9.5	11.1
Alpena, Mich.	10.4	9.7	9.5	9.7	9.4	9.6	10.0	9.9	11.6	12.2	13.1	12.8	13.4	13.0	13.6	13.6	13.5	12.9	11.4	10.2	10.1	10.4	9.9	10.6	11.3
Amarillo, Tex.	20.3	19.8	19.0	18.5	17.6	17.5	16.6	15.3	16.2	17.5	19.5	20.0	21.5	22.1	22.1	21.2	21.6	21.3	21.8	20.5	19.8	20.6	21.2	20.6	19.7
Atlanta, Ga.	11.0	10.9	11.7	11.0	10.6	10.8	10.6	10.9	11.7	12.9	13.4	13.3	13.9	14.0	13.9	13.8	13.2	11.9	10.5	10.5	9.9	10.2	10.9	11.1	11.8
Augusta, Ga.	5.4	5.3	5.4	5.9	5.1	5.5	5.7	5.7	7.5	8.4	9.1	10.2	10.3	10.4	10.9	11.0	10.7	10.0	8.0	6.6	6.7	6.4	6.4	6.0	7.6
Baker City, Oreg.	4.5	4.4	4.9	5.4	5.5	5.8	5.6	5.4	5.5	5.7	6.0	6.0	5.4	5.7	6.5	7.2	7.1	7.3	6.2	6.4	5.3	4.3	4.6	4.5	5.6
Baltimore, Md.	8.6	8.8	9.2	8.5	8.8	7.9	8.4	8.8	10.7	12.9	13.2	13.4	14.3	13.5	14.2	14.4	13.9	12.0	11.1	10.5	9.8	8.7	9.1	8.4	10.8
Bismarck, N. Dak.	6.3	6.2	5.8	5.3	6.6	7.3	8.2	8.1	8.8	9.4	10.7	11.9	13.1	13.2	13.7	13.9	13.5	13.1	12.2	10.4	8.7	8.3	7.6	7.5	9.6
Block Island, R. I.	19.6	19.5	19.7	20.4	20.5	21.1	21.8	22.9	22.8	22.6	21.9	21.8	22.3	23.0	23.0	22.9	22.4	21.0	20.1	19.3	19.1	19.2	18.5	18.5	21.0
Boston, Mass.	15.2	15.3	14.9	14.6	14.9	14.2	15.1	16.1	17.1	17.5	18.2	18.6	18.5	18.3	17.9	18.8	18.6	18.3	17.1	16.2	15.5	15.0	14.7	13.8	16.4
Buffalo, N. Y.	17.5	17.8	17.0	16.9	15.9	15.6	15.2	15.2	16.2	16.6	17.7	18.3	19.2	20.0	20.5	20.8	20.8	20.3	19.3	17.7	17.6	17.4	16.9	16.5	17.8
Cairo, Ill.	8.5	9.1	9.1	8.5	8.1	8.7	8.2	9.1	10.9	11.5	11.5	11.5	11.7	11.7	12.2	12.2	11.2	10.3	10.4	9.3	9.1	9.5	9.3	9.2	10.0
Cape Henry, Va.	18.5	18.4	19.4	18.9	18.7	18.8	19.4	19.7	19.2	19.5	18.6	18.0	17.7	16.5	15.7	14.8	14.5	13.8	12.7	12.6	15.0	16.5	16.5	17.7	17.1
Charleston, S. C.	8.7	8.3	8.4	7.8	7.7	7.0	7.8	7.6	9.4	10.1	11.0	11.8	12.2	12.8	13.3	12.9	12.7	11.3	10.2	8.5	7.7	7.3	7.4	8.2	9.6
Charlotte, N. C.	8.8	9.5	8.9	8.1	8.1	8.4	8.4	8.5	9.4	10.5	10.8	9.9	10.0	10.7	11.2	11.0	10.7	9.4	7.2	6.8	6.9	6.7	7.2	8.2	9.0
Chattanooga, Tenn.	8.2	8.2	8.4	9.4	8.8	8.7	8.3	8.8	10.3	10.5	10.4	10.6	11.6	12.4	11.7	11.6	12.0	11.3	10.0	9.4	8.3	7.2	6.7	7.4	9.6
Cheyenne, Wyo.	10.5	10.9	12.0	12.5	13.1	13.3	13.6	14.8	14.5	14.6	16.9	18.7	19.4	20.2	19.7	19.7	19.6	19.2	17.5	14.8	12.7	11.0	10.6	10.4	15.0
Chicago, Ill.	16.4	16.8	17.4	17.6	18.0	18.0	19.0	20.4	20.7	19.2	19.5	18.6	18.0	17.7	16.5	15.7	14.8	14.5	13.8	12.7	12.6	15.0	15.9	16.0	18.4
Cincinnati, Ohio.	8.5	8.4	7.8	7.2	7.1	6.9	7.2	7.8	9.2	9.8	10.6	11.0	11.3	11.4	12.1	12.2	11.9	10.9	10.5	9.8	9.0	9.1	9.0	8.7	9.5
Cleveland, Ohio.	15.6	15.7	15.2	15.3	14.7	14.4	14.9	14.5	15.3	15.9	16.5	17.0	17.6	18.7	18.7	18.2	18.4	17.9	16.5	16.0	14.7	14.3	14.9	15.5	16.1
Columbia, Mo.	8.9	9.6	9.7	9.7	9.3	8.9	9.7	10.0	10.1	10.8	11.3	11.8	11.8	12.3	12.9	13.8	13.3	12.9	11.5	10.2	9.6	10.1	9.6	9.3	10.7
Columbus, Ohio.	7.6	8.2	8.2	8.0	7.0	6.7	7.0	7.3	8.3	8.5	9.2	9.6	10.0	10.2	10.5	10.6	10.5	10.0	8.7	8.6	8.3	8.1	8.2	8.0	8.6
Concordia, Kans.	7.8	7.8	8.0	8.6	9.1	8.0	7.4	7.7	8.4	9.7	10.0	10.5	10.7	11.5	12.5	12.6	12.9	12.7	11.5	9.9	9.3	9.2	9.1	8.4	9.7
Corpus Christi, Tex.	13.4	13.2	12.8	11.4	11.6	11.3	10.8	10.3	11.0	11.6	13.3	14.1	14.5	15.3	15.6	16.3	17.1	16.5	16.0	15.0	15.0	14.7	14.4	13.9	13.7
Davenport, Iowa.	9.7	9.5	9.8	9.1	9.3	9.3	9.7	10.0	10.9	11.6	12.0	12.8	12.7	13.0	13.4	13.1	12.8	12.2	11.8	10.5	10.4	10.6	10.0	10.1	11.0
Denver, Colo.	7.9	6.9	6.6	7.1	6.9	7.4	8.0	8.1	8.1	8.2	9.4	10.9	12.9	12.7	13.6	13.6	15.2	14.8	13.8	13.5	11.1	10.6	9.2	8.6	10.2
Des Moines, Iowa.	8.8	9.1	8.7	8.6	8.8	8.8	8.8	8.6	9.2	9.8	10.2	10.6	10.4	10.7	11.2	11.8	12.1	11.6	11.7	10.0	9.8	9.3	9.7	9.2	9.9
Detroit, Mich.	10.0	10.6	10.4	10.3	10.4	10.5	10.4	11.0	11.4	12.6	13.4	13.7	14.0	14.5	14.5	14.8	14.0	13.0	11.7	11.3	11.3	10.6	11.1	10.7	11.9
Dodge City, Kans.	11.6	11.7	10.6	10.2	9.6	9.2	9.1	8.9	8.6	11.2	13.3	14.9	16.6	16.4	16.9	16.8	17.4	17.0	16.3	14.5	12.6	13.4	12.7	12.5	13.0
Duluth, Minn.	12.2	11.7	12.4	12.0	12.2	11.8	12.1	12.2	12.5	11.8	12.5	13.3	13.6	13.9	14.4	13.8	13.9	13.2	12.5	11.7	11.7	11.9	12.5	12.6	12.6
Eastport, Me.	16.8	16.7	16.6	16.9	17.0	16.6	16.5	17.0	17.6	17.4	17.5	17.3	17.8	18.8	18.5	19.1	18.4	17.9	17.3	18.2	18.6	18.9	17.6	17.3	17.6
Elpaso, Tex.	12.7	12.6	12.3	11.9	11.3	10.5	10.3	9.8	9.0	9.3	10.5	13.0	14.9	16.7	17.7	19.9	21.3	21.0	21.4	19.9	15.9	13.9	13.1	12.5	14.2
Erie, Pa.	11.2	11.6	11.5	11.3	10.8	10.7	11.6	11.0	11.7	12.3	13.0	13.5	14.6	15.3	15.8	16.0	15.1	14.1	13.0	12.8	12.7	13.3	12.0	11.9	12.8
Eureka, Cal.	5.9	5.6	4.8	5.1	4.4	3.7	4.1	3.8	4.0	3.5	4.0	3.7	4.9	6.3	8.0	9.6	10.5	10.9	11.2	10.4	9.0	7.8	6.5	5.6	6.4
Fort Canby, Wash.	11.4	10.3	10.3	10.7	10.3	11.2	11.6	11.4	11.3	11.4	11.6	12.2	12.9	13.3	12.6	12.8	12.8	12.9	13.3	13.5	13.6	13.6	13.1	12.7	12.1
Fort Smith, Ark.	7.5	8.1	8.1	8.6	8.0	7.8	7.5	8.1	9.3	10.1	10.4	9.5	10.0	10.6	11.0	11.4	11.7	10.8	9.2	7.5	7.2	6.8	7.2	7.1	8.9
Fresno, Cal.	5.2	5.5	5.4	5.0	4.6	4.8	5.0	4.9	4.7	4.8	4.8	5.9	6.4	6.1	5.9	5.8	6.3	6.3	6.3	6.0	5.1	4.4	4.4	4.9	5.4
Galveston, Tex.	11.4	12.3	12.3	11.5	11.8	12.1	11.8	11.6	11.3	12.1	12.2	12.1	13.0	13.4	13.2	13.2	12.6	12.6	12.6	12.3	12.7	12.2	11.8	11.6	12.2
Grand Haven, Mich.	10.3	10.2	10.2	10.2	10.2	10.9	10.5	10.5	11.1	11.6	11.6	12.1	13.0	13.9	13.8	13.0	12.2	11.6	11.2	9.9	10.0	10.3	9.8	10.1	11.2
Green Bay, Wis.	9.4	8.9	9.1	8.8	8.8	8.7	8.9	9.4	10.1	11.0	11.4	11.5	11.8	12.5	12.2	11.7	11.4	10.9	10.2	9.9	9.5	9.8	9.5	9.1	10.2
Hannibal, Mo.	8.9	8.5	8.9	9.0	8.7	8.8	8.8	9.0	10.1	11.3	12.1	12.0	12.7	11.9	12.5	12.4	12.5	11.9	10.6	8.9	8.0	8.8	9.1	9.4	10.2
Harrisburg, Pa.	10.1	9.9	9.7	10.1	10.0	9.7	9.0	9.5	10.1	11.3	11.4	12.1	12.4	12.6	12.9	13.2	12.1	12.1	11.5	11.6	11.0	10.5	10.5	10.1	11.0
Hatteras, N. C.	17.8	17.8	18.1	18.5	18.9	18.8	19.6	19.5	19.7	19.4	19.0	18.4	17.9	17.8	18.2	17.9	17.8	16.1	15.8	14.2	13.9	14.5	15.0	16.1	17.5
Havre, Mont.	8.1	8.3	8.8	9.0	9.5	9.2	8.1	9.1	9.3	8.8	9.3	10.6	11.7	12.6	12.4	12.4	13.2	11.8	11.1	10.2	8.8	9.2	10.0	8.7	10.0
Helena, Mont.	7.9	7.6	7.7	7.9	7.5	7.3	7.3	7.8	8.1	7.3	7.5	8.5	10.2	10.3	11.2	11.3	10.8	11.1	10.6	9.1	9.0	8.9	8.6	8.0	8.8
Huron, S. Dak.	11.7	11.8	11.4	10.9	11.2	11.9	11.1	12.5	13.3	14.5	16.0	17.5	18.4	18.6	18.5	17.7	17.0	16.3	15.3	13.8	13.3	13.3	12.5	12.3	14.2
Idaho Falls, Idaho.	9.6	9.7	9.6	9.3	9.3	9.2	8.7	8.5	8.2	7.2	8.5	9.2	9.7	10.3	10.8	10.7	11.6	11.8	12.0	12.2	11.5	11.1	11.0	9.6	10.0
Indianapolis, Ind.	5.8	5.5	5.6	6.5	6.4	6.4	6.1	6.5	7.4	7.9	8.7	9.3	9.1	9.2	9.3	9.3	9.5	8.8	7.6	7.0	7.0	6.6	6.4	6.5	7.4
Jacksonville, Fla.	6.4	6.8	6.2	6.5	6.2	6.1	5.8	5.8	7.1	9.1	9.5	9.2	9.5	9.1	9.4	9.5	9.5	9.9	8.5	7.3	6.5	6.2	6.0	6.0	7.6
Jupiter, Fla.	9.6	9.8	9.0	8.6	8.3	8.2	7.9	8.9	10.2	12.2	12.7	13.7	14.0	13.7	14.0	13.9	13.2	11.9	10.1	9.3	9.4	9.8	10.1	10.0	10.8
Kansas City, Mo.	9.8	9.8	9.9	10.0	9.5	9.1	8.7	8.8	9.1	9.7	10.1	10.5	10.8	10.9	10.6	11.1	11.1	11.0	10.8	9.5	9.0	9.5	9.7	10.0	10.0
Keokuk, Iowa.	7.9	7.8	8.1	8.3	8.0	7.8	8.0	8.1	8.8	9.5	10.1	10.6	10.4	11.2	11.3	10.6	10.6	10.3	9.5	8.3	7.4	7.8	8.2	8.8	9.1
Key West, Fla.	10.0	10.5	10.7	10.6	10.1	10.4	10.0	10.4	11.1	11.6	11.7	11.9	12.0	12.4	12.3	12.6	12.1	12.1	11.2	11.5	11.6	11.8	11.0	10.7	11.3
Kittyhawk, N. C.	18.4	19.6	19.8	19.9	20.0	20.1	19.0	19.6	20.2	20.8	20.8	20.5	20.0	19.7	18.5	18.6	17.8	17.5	15.4	13.4	13.9	15.5	16.9	17.5	18.5
Knoxville, Tenn.	5.6	6.2	6.5	6.9	6.6	6.6	5.8	5.6	6.6	7.3	7.7	7.6	8.3	8.6	9.6	9.6	9.3	8.5	7.3	6.2	6.2	6.0	5.6	5.5	7.1
La Crosse, Wis.	7.3	7.5	7.2	7.8	7.6	7.4	7.9	8.6	9.1	9.4	9.8	9.1	9.6	10.3	10.7	11.0	10.8	10.8	10.1	9.1	8.7	8.7	8.1	7.0	8.9
Lander, Wyo.	4.2	5.0	4.7	4.6	4.0	4.1	3.9	4.2	4.0	3.5	3.1	4.1	5.6	6.3	6.7	6.9	6.5	6.7	6.2	5.9	6.0	5.0	5.1	4.5	5.0
Lexington, Ky.	13.2	13.1	13.3	13.1	13.0	12.6	13.7	13.4	13.5	14.0	14.2	14.8	15.5	15.4	17.5	16.9	16.1	14.9	13.5	12.9	13.3	12.1	12.5	13.3	14.0
Little Rock, Ark.	7.8	7.7	7.7	7.8	8.0	8.6	8.0	8.4	8.7	10.6	11.0	10.7	11.3	10.9	10.8	11.2	11.0	10.4	10.4	8.6	7.9	7.6	7.4	7.6	9.2
Los Angeles, Cal.	2.4	2.5	2.7	2.7	2.5	2.6	2.8	3.2	3.4	3.6	3.5	4.4	4.4	4.3	4.8	5.5	5.9	6.3	5.9	5.3	4.6	3.1	2.4	1.8	3.8
Louisville, Ky.	8.0	8.0	8.2	8.1	8.2	7.3	7.4	7.7	9.2	10.0	11.0	11.5	12.2	12.5	12.7	12.4	12.0	11.7	11.1	9.7	9.4	8.8	8.8	8.2	9.8
Lynchburg, Va.	5.6	5.4	5.1	5.6	5.8	4.8	4.4	5.0	6.0	7.4	7.7	8.0	8.4	8.5	8.8	9.0	8.8	8.7	7.6	6.5	5.8	5.3	5.5	6.0	6.6
Marquette, Mich.	10.7	11.9	12.7	12.5	12.5	12.5	13.1	13.2	12.9	12.2	13.2	13.8	15.2	15.2	14.6	14.4	13.3	12.6	11.9	10.9	11.0	11.7	12.0	11.9	12.8
Memphis, Tenn.	12.0	11.9	12.2	11.5	11.2	11.2	11.7	11.8	11.9	12.8	12.7	12.6	12.3	12.4	11.9	12.6	11.9	12.1	11.7	11.0	12.3	13.0	12.7	12.4	12.1
Meridian, Miss.	6.5	5.7	5.7	5.6	5.4	5.4	5.5	5.5	7.0	8.5	9.4	9.1	9.6	9.0	9.0	9.5	8.8	8.2	7.5	5.9	5.6	6.6	6.9	6.5	7.2
Miles City, Mont.	7.5	7.6	6.6	6.5	7.3	7.6	8.4	7.5	7.2	6.6	7.2	7.5	8.5	8.7	9.5	10.7	10.9	10.2	10.1	9.4	8.1	6.9	6.8	7.2	8.1
Milwaukee, Wis.	11.2	11.2	11.3	11.2	11.7	11.2	11.5	11.5	12.9	13.1	13.5	14.1	14.0	14.4	14.7	14.8	14.4	13.6	12.3	10.7	10.6	10.5	11.6	11.3	12.4
Mobile, Ala.	6.5	6.7	6.3	6.0	6.4	6.5	6.4	6.3	7.0	8.5	9.3	9.4	11.1	11.6	12.2	13.2	13.2	11.7	11.3	9.7	8.5	7.5	7.2	6.5	8.7
Montgomery, Ala.	6.8	6.9	6.2	6.2	6.3	5.9	5.6	6.1	7.6	8.9	8.9	9.6	9.4	10.4	10.5	10.2	10.0	9.4	7.8	7.7	7.2	7.3	7.0	6.6	7.9
Moorhead, Minn.	10.3	10.1	9.6	9.3	9.2	9.1	9.7	10.5	11.0	11.4	11.5	12.5	13.5	13.8	14.4	14.1	14.5	13.4	12.4	11.2	10.0	10.4	10.6	10.5	11.4
Nantucket, Mass.	15.4	14.9	14.6	14.5	14.1	14.4	15.4	16.2	16.7	16.9	16.6	17.0	17.8	17.9	17.9	17.4	17.6	17.3	17.2	16.2	15.9	15.5	14.5	14.7	16.1
Nashville, Tenn.	7.8	7.3	7.4	7.3	7.7	6.6	7.1	7.3	8.4	9.2	9.6	9.8	10.9	10.8	10.9	11.2	10.7	9.9	9.0	8.4	8.3	8.3	7.4	7.3	8.7
New Haven, Conn.	11.3	11.5	11.5	11.9	11.7	11.9	11.6	12.7	14.8	15.6	15.9	16.5	15.7	16.6	16.4	16.2	16.5	15.5	14.4	14.6	14.0	13.2	12.6	11.5	13.9
New Orleans, La.	8.5	8.9	8.9	8.7	8.6	7.8	7.9	8.5	9.2	11.1	11.7	12.4	13.5	13.7	13.2	12.7	12.6	11.9	11.4	9.7	9.2	8.9	9.2	9.2	10.3
New York, N. Y.	19.3	19.4	18.0	18.5	17.9	18.4	18.6	19.0	20.0	20.3	20.5	21.3	22.2	22.5	22.1	22.2	22.3	22.4	21.3	20.6	20.3	19.2	18.0	18.6	20.1
Norfolk, Va.	11.2	11.0	10.8	11.4	11.6	11.4	11.9	11.8	13.2	14.5	15.1	15.1	15.3	13.7	13.5	13.6	13.8	12.1	10.6	9.7	11.2	11.4	10.8	10.9	12.3
Northfield, Vt.	11.3	11.2	11.5	12.0	11.5	11.3	10.7	12.0	13.0	14.1	14.5	15.1	14.8	15.1	14.3	14.2	13.6	12.2	11.5	12.0	11.4	11.1	11.7	11.6	12.6
North Platte, Nebr.	10.2	10.2	9.4	8.8	8.1	8.2	8.6	9.1	9.4	10.5	13.0	13.5	14.7	16.0	16.1	16.2	15.9	15.4	14.5	13.0	10.6	11.2	10.6	10.0	11.8
Oklahoma, Okla.	10.6	10.6	10.2	10.1	10.4	10.4	10.5	10.8	12.1	12.8	13.4	13.1	12.5	13.2	12.7	12.5	12.0	12.0	12.0	10.1	9.7	11.1	11.5	11.2	11.5
Omaha, Nebr.	8.0	7.8	7.4	7.2	7.3	7.6	7.6	7.5	7.9	7.7	8.3	9.3	9.9	10.7	10.5	10.6	10.2	10.3	10.4	9.8	9.6	8.6	9.0	8.4	8.8
Oswego, N. Y.	15.8	15.7	14.9	15.1	14.8	14.9	13.8	14.2	15.1	15.3	15.8	15.6	16.0	16.1	16.8	17.0	17.3	17.0	16.6	16.7	16.3	16.6	16.8	16.1	15.9
Palestine, Tex.	8.0	7.9	7.9	7.7	7.1	7.4	7.1	7.2	7.2	8.6	9.7	10.5	10.5	10.5	10.7	11.5	11.1	10.2	9.6	8.2	7.3	7.4	7.7	7.7	8.7
Parkersburg, W. Va.	6.2	6.2	5.8	6.1	6.1	6.2	5.9	6.5	6.6	7.0	7.7	8.0	9.2	9.3	9.5	9.7	9.7	9.5	8.4	7.2	7.5	6.9	6.7	6.3	7.4
Pensacola, Fla.	9.5	9.2	8.5	8.3	8.6	8.2	8.5	8.5	10.4	11.6	11.9	11.8	12.5	12.2	11.9	12.5	12.8	11.6	11.4	9.8	8.9	8.9	8.9	9.1	10.2

TABLE VII.—*Average wind movement, etc.*—Continued.

Stations.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Mean.
Philadelphia, Pa	13.1	12.6	12.4	12.7	12.5	12.2	12.0	13.5	14.6	14.7	15.5	15.3	16.2	16.4	16.6	16.7	15.9	15.2	13.2	12.4	12.7	12.2	12.7	13.1	13.9
Phœnix, Ariz	4.5	4.6	4.2	4.4	4.9	5.5	6.0	5.5	5.6	5.3	5.2	5.7	5.8	5.5	5.5	5.9	6.3	6.3	5.3	4.6	3.7	3.9	3.9	4.4	5.1
Pierre, S. Dak	7.6	8.2	7.6	8.0	7.5	8.0	8.5	8.8	9.2	10.2	10.5	11.1	11.9	12.7	12.9	13.8	12.0	12.4	11.9	9.5	10.4	9.5	8.5	8.2	10.0
Pittsburg, Pa	6.9	7.2	7.1	6.9	7.2	6.9	7.1	7.3	8.1	8.2	8.3	8.4	9.0	9.7	9.6	9.7	9.5	9.1	8.2	7.9	8.0	7.4	7.4	6.8	8.0
Port Angeles, Wash	6.6	6.2	6.6	6.7	6.3	6.2	6.1	6.8	6.8	6.9	5.6	3.9	4.4	6.3	7.9	8.7	8.5	8.5	8.3	8.0	7.2	5.8	6.4	6.4	6.7
Port Huron, Mich	11.7	11.2	11.4	12.0	12.0	11.9	12.1	12.3	14.5	15.4	15.3	14.9	16.0	17.0	16.5	16.4	16.1	14.5	13.0	11.9	11.6	11.9	12.0	11.4	13.5
Portland, Me	10.2	9.9	10.0	9.6	9.4	9.8	10.2	11.0	11.5	11.6	11.8	12.5	13.1	13.3	13.6	13.4	12.3	12.1	11.1	11.4	10.5	10.7	10.6	10.5	11.3
Portland, Oreg	9.0	9.2	9.7	8.8	8.5	8.8	9.0	8.6	8.3	8.7	9.7	10.2	10.7	10.2	10.6	11.7	13.0	12.8	12.4	11.7	10.9	10.3	9.3	9.0	10.0
Pueblo, Colo	7.8	7.5	7.6	7.7	6.3	5.8	6.1	6.2	6.6	7.8	9.8	11.2	12.1	13.9	14.0	13.9	14.0	13.9	13.7	13.0	11.9	10.6	9.5	8.2	10.0
Raleigh, N. C	8.0	8.5	8.3	7.5	7.4	7.5	7.7	8.9	10.0	10.5	10.4	10.5	10.4	10.8	10.8	10.7	10.4	8.5	6.4	7.4	7.5	8.0	8.2	8.0	8.8
Rapid City, S. Dak	7.8	8.5	8.2	9.5	9.6	9.0	9.0	9.5	10.4	10.9	10.4	12.2	13.2	13.3	13.3	13.2	12.9	12.1	11.3	9.1	7.6	7.5	7.3	7.6	10.1
Redbluff, Cal	6.6	6.9	7.0	6.7	7.0	6.7	6.4	6.2	6.4	5.9	6.1	6.8	8.2	8.5	8.4	8.5	8.8	8.7	8.4	8.0	7.2	6.8	6.5	6.1	7.2
Rochester, N. Y	9.8	9.5	9.8	9.2	9.4	9.3	9.3	9.4	10.3	11.6	12.4	12.8	13.2	13.5	13.4	13.5	12.9	12.0	10.8	10.3	9.5	9.7	9.9	9.7	10.9
Roseburg, Oreg	2.9	2.6	2.3	2.5	2.6	2.7	2.6	2.8	3.1	3.0	3.2	3.3	3.6	4.0	5.1	4.9	5.4	6.0	5.7	5.5	5.2	3.9	2.8	2.6	3.7
Sacramento, Cal	9.7	9.3	8.7	9.5	9.4	8.8	8.6	8.9	8.9	9.0	9.0	9.7	11.0	11.0	11.3	11.4	11.0	10.4	10.2	10.4	9.1	8.1	8.5	9.2	9.6
St. Louis, Mo	10.3	10.0	10.1	10.6	10.9	11.1	11.5	11.8	12.7	13.0	13.9	13.8	14.4	14.6	14.5	14.5	13.8	13.2	12.7	11.4	10.4	10.1	10.9	10.2	12.1
St. Paul, Minn	8.2	8.1	7.6	8.2	8.3	8.0	7.6	7.7	8.1	9.1	9.2	10.0	10.9	11.2	11.7	11.9	11.3	11.3	10.1	9.4	9.2	8.8	9.0	9.0	9.3
Salt Lake City, Utah	5.8	5.4	4.8	4.2	4.1	4.5	4.1	3.7	3.7	3.6	4.2	4.9	7.3	8.3	9.3	8.9	9.6	9.1	8.6	7.0	5.4	4.9	4.8	5.1	5.9
San Antonio, Tex	8.8	8.5	7.5	7.3	7.3	7.3	7.8	7.4	7.7	9.4	12.1	12.0	10.9	11.8	12.0	12.1	12.3	12.7	12.3	12.2	11.5	11.8	11.1	10.1	10.2
San Diego Cal	4.0	3.9	3.8	3.6	4.3	3.9	3.6	4.0	4.3	3.3	3.6	4.1	5.6	6.3	8.1	8.9	9.7	9.6	9.3	8.8	7.2	5.3	4.4	3.8	6
Sandusky, Ohio	10.6	9.9	10.0	9.6	9.7	9.5	9.5	9.6	10.5	10.8	11.4	11.4	11.5	11.8	12.0	12.2	11.8	11.7	11.0	10.2	10.3	10.4	10.4	10.4	10.7
San Francisco, Cal	8.2	7.5	6.9	6.6	6.6	6.0	5.9	6.2	6.2	6.6	6.5	6.6	6.8	7.7	8.8	9.7	10.8	12.2	12.8	12.5	12.5	11.2	8.8	7.1	8.4
San Luis Obispo, Cal	2.8	3.3	2.8	3.3	3.3	3.2	3.4	3.9	4.1	4.4	4.1	4.6	5.5	6.6	7.3	8.0	8.2	8.7	8.3	7.4	5.7	4.8	3.4	3.1	5.0
Santa Fe, N. Mex	5.7	5.2	4.6	4.7	4.9	4.7	5.3	5.0	5.1	5.9	8.0	10.4	11.4	11.7	12.1	13.3	13.9	14.3	13.4	13.0	9.9	7.2	6.6	6.3	8.4
Sault Ste Marie, Mich	8.0	8.0	7.3	7.3	7.3	7.0	6.4	6.2	6.5	7.7	8.2	9.6	11.2	12.8	13.9	14.1	13.5	12.2	10.8	10.1	9.8	9.2	8.9	8.5	9.4
Savannah, Ga	9.5	8.3	8.1	7.5	7.4	7.3	7.5	7.6	9.0	9.5	9.9	11.2	11.8	11.7	12.2	13.2	13.2	12.3	10.1	8.7	8.8	8.8	9.0	9.5	9.7
Seattle, Wash	4.9	5.1	5.3	5.0	4.9	4.5	4.9	5.6	4.9	4.5	5.0	5.4	5.7	5.9	7.2	8.0	8.1	8.5	8.4	8.0	6.6	6.0	5.7	5.2	6.0
Shreveport, La	8.3	8.5	8.1	8.0	7.9	7.5	7.5	7.3	8.1	9.3	9.9	10.1	10.9	10.8	11.0	11.0	11.3	11.4	10.7	9.3	8.8	9.2	8.9	8.6	9.3
Sioux City, Iowa	10.4	11.0	11.1	10.9	10.3	10.9	10.6	11.3	11.6	13.2	14.0	15.2	15.6	16.3	17.2	17.2	17.6	17.5	16.0	14.6	13.6	12.4	11.8	11.7	13.4
Spokane, Wash	6.3	6.5	6.4	6.2	6.3	5.7	6.3	6.5	6.4	6.2	7.0	8.0	8.3	9.8	10.1	9.7	10.2	10.0	9.0	8.7	8.1	7.4	7.1	6.0	7.6
Springfield, Ill	9.2	9.3	10.2	10.2	10.5	9.8	9.9	10.3	11.9	12.7	13.0	13.3	13.5	13.9	13.9	13.0	12.7	11.6	11.0	9.1	9.1	9.2	9.2	9.2	11.1
Springfield, Mo	11.3	11.5	11.5	11.3	11.8	12.0	11.7	11.7	11.6	12.6	13.2	12.9	13.8	14.5	14.3	14.4	14.2	13.2	10.5	9.6	9.8	10.8	11.5	11.5	12.1
Tampa, Fla	4.6	4.8	4.8	5.9	5.6	6.1	6.4	6.7	7.3	9.0	8.6	8.8	8.7	9.3	9.5	9.8	9.9	9.0	7.5	6.6	5.5	5.0	4.8	4.7	7.0
Tatoosh Island, Wash	14.5	14.8	15.1	14.1	14.4	14.5	14.6	15.7	15.7	15.5	16.1	16.4	16.1	14.9	15.6	15.8	15.6	15.8	15.0	14.6	15.1	15.9	15.3	15.1	15.3
Toledo, Ohio	10.1	10.0	9.8	9.7	9.5	9.5	10.3	10.3	11.6	11.9	12.7	13.3	13.8	14.2	14.0	13.9	13.1	12.4	11.5	10.3	10.5	10.5	10.5	10.3	11.4
Vicksburg, Miss	9.5	9.1	8.6	8.5	8.8	9.1	9.7	9.1	9.5	10.0	10.1	10.1	10.2	9.3	9.6	9.8	9.9	10.0	9.3	8.5	8.8	9.1	9.7	9.9	9.4
Vineyard Haven, Mass	11.5	11.2	11.1	11.2	11.6	12.0	11.8	12.6	13.0	14.0	14.0	14.8	14.9	14.7	14.6	14.5	14.5	13.4	12.1	11.7	11.6	11.3	11.0	10.7	12.7
Walla Walla, Wash	5.8	5.4	5.5	5.4	5.2	5.6	5.6	5.5	5.5	5.5	6.1	7.3	7.9	8.2	8.9	8.8	8.5	8.0	7.9	7.3	6.5	6.8	7.0	6.6	6.7
Washington, D. C	9.4	9.4	9.5	9.5	9.1	8.4	8.1	9.6	11.5	13.0	13.3	13.2	14.2	14.1	14.3	13.6	14.1	12.3	10.6	9.9	9.5	8.6	9.4	8.6	11.0
Wichita, Kans	10.6	10.4	10.9	11.4	11.3	10.7	10.8	10.6	11.0	12.1	12.8	12.7	12.6	13.3	13.6	14.2	13.5	13.1	12.6	11.6	10.5	10.6	11.1	11.4	11.8
Williston, N. Dak	6.7	8.3	7.6	7.3	8.8	9.1	9.1	9.1	8.8	8.8	9.4	10.6	11.2	12.0	12.8	13.0	12.7	11.4	10.4	10.4	8.5	7.5	7.1	6.6	9.5
Wilmington, N. C	8.8	8.5	8.4	9.1	9.0	9.2	9.8	10.1	12.7	13.5	14.1	14.7	15.9	15.8	16.0	15.7	15.4	12.5	10.2	9.5	9.0	8.8	8.4	8.5	11.4
Winnemucca, Nev	9.5	9.5	10.1	10.0	9.9	9.5	9.7	10.1	8.8	10.1	11.1	12.2	12.4	13.2	15.3	15.5	16.2	15.7	14.0	13.8	11.6	10.4	9.4	8.9	11.5
Woods Hole, Mass	18.9	19.6	19.9	20.1	20.4	21.8	21.4	21.3	21.7	21.2	22.0	22.0	23.1	22.8	23.7	23.2	23.6	23.1	20.9	20.7	20.3	20.3	20.3	19.1	21.3
Yuma, Ariz	6.3	6.5	5.9	7.0	6.8	6.0	6.2	5.9	5.4	5.7	6.3	8.3	9.2	9.9	9.5	9.6	9.6	10.1	9.9	10.0	8.5	7.7	7.3	7.1	7.7

TABLE VIII.—*Heights of rivers above low-water mark, March*, 1896.

Stations.	Distance to mouth of river.	Danger-point on gauge.	Highest water.		Lowest water.		Me'n stage.	Monthly range.
			Height.	Date.	Height.	Date.		
Mississippi River.	*Miles.*	*Feet.*	*Feet.*		*Feet.*		*Feet.*	*Feet*
St. Paul, Minn.[1]	2,057	14.0	0.7	31	— 0.9	19,20	—0.3	1.6
La Crosse, Wis.[2]	1,867	10.0	.....	.....	.....	.....	.....	.....
Dubuque, Iowa[3]	1,759	15.0	.....	.....	.....	.....	.....	.....
Davenport, Iowa	1,653	15.0	2.0	1	0.5	20,21	1.1	1.5
Keokuk, Iowa	1,523	14.0	4.0	1	0.0	17,22	1.1	4.0
Hannibal, Mo	1,462	17.0	5.3	1	0.6	26,27	1.8	4.7
St. Louis, Mo	1,321	30.0	9.2	2	4.7	21	6.8	4.5
Memphis, Tenn	910	33.0	23.9	29	8.7	8,9	13.0	15.2
Helena, Ark	834	37.0	31.1	31	15.0	8-10	19.4	16.1
Arkansas City, Ark	702	42.0	32.5	31	18.1	11	22.4	14.4
Greenville, Miss	662	40.0	27.3	31	14.9	11,12	18.5	12.4
Vicksburg, Miss	541	41.0	30.0	1	17.7	14	21.6	12.3
New Orleans, La[4]	108	13.0	12.6	1	7.9	21,22	9.5	4.7
Missouri River.								
Pierre, S. Dak[5]	1,132	13.0	.....	.....	.....	.....	.....	.....
Sioux City, Iowa	802	18.7	12.4	21	5.6	2	7.9	6.8
Omaha, Nebr	667	18.0	.....	.....	.....	.....	.....	.....
Kansas City, Mo	386	21.0	10.3	26	4.3	14	6.5	6.0
Ohio River.								
Parkersburg, W. Va	786	38.0	25.5	31	8.5	1,8,16	13.0	17.0
Catlettsburg, Ky	652	50.0	38.0	31	10.3	1	20.1	27.7
Cincinnati, Ohio	500	45.0	35.8	23	12.4	1	22.5	23.4
Louisville, Ky.	368	24.0	14.1	23	6.4	3	9.3	7.7
Evansville, Ind.	184	30.0	32.1	25	9.0	5	17.8	23.1
Paducah, Ky	47	40.0	30.5	26	8.9	6	17.6	21.6
Cairo, Ill	1,140*	40.0	32.9	27,28	15.2	6	21.5	17.7
Monongahela River.								
Pittsburg, Pa	966†	22.0	20.8	31	3.9	16	8.3	16.9
Great Kanawha River.								
Charleston, W. Va	61	30.0	24.7	31	4.5	1,7	8.2	20.2

Stations.	Distance to mouth of river.	Danger-point on gauge.	Highest water.		Lowest water.		Me'n stage.	Monthly range.
			Height.	Date.	Height.	Date.		
Big Sandy River.	*Miles.*	*Feet.*	*Feet.*		*Feet.*		*Feet.*	*Feet.*
Louisa, Ky	26	.....	33.4	31	4.3	7	11.1	29.1
Wabash River.								
Mount Carmel, Ill	50	15.0	9.5	31	4.5	6,7	6.2	5.0
Cumberland River.								
Burnside, Ky	404	50.0	37.3	17	2.0	1	12.0	35.3
Nashville, Tenn	145	40.0	35.2	22	4.5	5	17.4	30.7
Tennessee River.								
Knoxville, Tenn	640	29.0	6.2	19	0.5	15	2.3	5.7
Chattanooga, Tenn	455	33.0	15.7	20	3.4	7,10	6.3	12.3
Johnsonville, Tenn	94	21.0	20.9	23	5.5	5	11.1	15.4
Arkansas River.								
Fort Smith, Ark	351	22.0	8.7	27	4.0	11,14	5.5	4.7
Little Rock, Ark	176	23.0	10.7	20	7.8	2,3	8.9	3.4
Red River.								
Shreveport, La	449	29.2	16.0	1	12.2	18,19	13.6	3.8
James River.								
Lynchburg, Va	251	18.0	9.2	31	0.6	10	2.8	8.6
Congaree River.								
Columbia, S. C	.....	15.0	2.3	1	0.7	30,31	1.2	1.6
Savannah River.								
Augusta, Ga	140	32.6	10.5	13	7.1	30,31	8.1	3.4
Alabama River.								
Montgomery, Ala	215	48.0	13.0	22	4.0	6	8.3	9.0
Willamette River.								
Portland, Oreg	.....	15.0	9.8	1	4.6	18,19	6.7	5.2
Sacramento River.								
Redbluff, Cal	.....	30.0	15.5	27	3.0	4	6.5	12.5
Sacramento, Cal	.....	28.0	21.8	30,31	15.6	6-11	17.5	6.2

*To mouth of Mississippi River. †To mouth of Ohio River. [1] Record from 10th to 31st, inclusive. [2] River frozen from 1st to 22d, inclusive.
[3] River frozen from 1st to 21st, inclusive. [4] Record for 27 days. [5] River frozen from 1st to 26th, inclusive.

TABLE IX.—*Resultant winds from observations at 8 a. m. and 8 p. m., daily, during March, 1896.*

Stations.	Component direction from—				Resultant.		Stations.	Component direction from—				Resultant.	
	N.	S.	E.	W.	Direction from—	Duration.		N.	S.	E.	W.	Direction from—	Duration.
New England.	*Hours.*	*Hours.*	*Hours.*	*Hours.*	°	*Hours.*	*Upper Lake Region*—Cont'd.	*Hours.*	*Hours.*	*Hours.*	*Hours.*	°	*Hours.*
Eastport, Me	17	11	16	26	n. 59 w.	12	Milwaukee, Wis	22	18	12	23	n. 70 w.	12
Portland, Me	25	15	3	33	n. 72 w.	32	Greenbay, Wis	21	26	10	14	s. 39 w.	6
Northfield, Vt	29	23	6	15	n. 56 w.	11	Duluth, Minn	31	13	15	25	n. 29 w.	21
Boston, Mass	23	13	8	33	n. 68 w.	27	*North Dakota.*						
Nantucket, Mass	31	9	15	19	n. 10 w.	22	Moorhead, Minn	28	21	6	12	n. 41 w.	9
Woods Hole, Mass.*	7	10	4	16	s. 76 w.	12	Bismarck, N. Dak	31	15	14	15	n. 3 w.	16
Block Island, R. I	28	12	12	32	n. 51 w.	26	Williston, N. Dak	27	16	15	17	n. 10 w.	11
New Haven Conn	23	13	7	33	n. 69 w.	28	*Upper Mississippi Valley.*						
Middle Atlantic States.							St. Paul, Minn	21	20	15	27	n. 85 w.	12
Albany, N. Y	22	16	5	29	n. 76 w.	25	La Crosse, Wis	9	14	5	7	s. 22 w.	5
New York, N. Y	26	7	11	34	n. 50 w.	30	Davenport, Iowa	21	16	15	25	n. 63 w.	11
Harrisburg, Pa	11	5	15	35	n. 73 w.	21	Des Moines, Iowa	29	17	12	21	n. 37 w.	15
Philadelphia, Pa	27	14	10	28	n. 54 w.	22	Keokuk, Iowa	26	19	15	17	n. 16 w.	7
Baltimore, Md	24	15	12	25	n. 55 w.	16	Cairo, Ill	28	17	16	13	n. 15 e.	11
Washington, D. C	26	14	11	23	n. 41 w.	18	Springfield, Ill	21	18	19	21	n. 34 w.	4
Lynchburg, Va	29	17	11	31	n. 73 w.	21	Hannibal Mo	23	19	16	18	n. 27 w.	4
Norfolk, Va	27	15	18	17	n. 5 e.	12	St. Louis, Mo	28	15	17	17	n.	13
South Atlantic States.							*Missouri Valley.*						
Charlotte, N. C	13	25	22	18	s. 18 e.	13	Columbia, Mo.*	12	9	8	11	n. 45 w.	4
Hatteras, N. C	23	18	11	23	n. 67 w.	13	Kansas City, Mo	26	17	21	15	n. 34 e.	11
Kittyhawk, N. C	27	16	11	23	n. 47 w.	16	Springfield, Mo	20	18	26	16	n. 79 e.	10
Raleigh, N. C	21	19	9	25	n. 83 w.	16	Omaha, Nebr	29	16	10	22	n. 43 w.	18
Wilmington, N. C	18	18	14	28	w.	14	Sioux City, Iowa	15	8	6	9	n. 23 w.	8
Charleston, S. C	16	20	13	27	s. 74 w.	15	Pierre, S. Dak	21	10	22	19	n. 15 e.	11
Augusta, Ga	13	19	12	29	s. 71 w.	18	Huron, S. Dak	25	15	15	22	n. 35 w.	12
Savannah, Ga	16	20	14	21	s. 60 w.	8	*Northern Slope.*						
Jacksonville, Fla	17	19	18	19	s. 27 w.	2	Havre, Mont	16	14	17	28	n. 80 w.	11
Florida Peninsula.							Miles City, Mont	33	9	14	18	n. 9 w.	24
Jupiter, Fla	16	21	22	13	s. 61 e.	10	Helena, Mont	16	18	4	36	s. 87 w.	32
Key West, Fla	25	9	36	5	n. 63 e.	35	Rapid City, S. Dak	22	16	16	22	n. 45 w.	8
Tampa, Fla	25	14	12	23	n. 45 w.	16	Cheyenne, Wyo	24	11	7	32	n. 63 w.	28
Eastern Gulf States.							Lander, Wyo	12	27	14	25	s. 36 w.	19
Atlanta, Ga	15	18	12	30	s. 81 w.	18	North Platte, Nebr	23	16	15	25	n. 55 w.	12
Pensacola, Fla	20	25	21	11	s. 63 e.	11	*Middle Slope.*						
Mobile, Ala	21	27	15	10	s. 40 e.	8	Denver, Colo	19	24	11	22	s. 66 w.	12
Montgomery, Ala	22	30	22	14	n. 76 e.	8	Pueblo, Colo	28	14	17	21	n. 16 w.	15
Meridian, Miss	23	27	15	8	s. 60 e.	8	Concordia, Kans	26	15	16	16	n.	11
Vicksburg, Miss	17	25	26	9	s. 65 e.	19	Dodge City, Kans	31	13	20	11	n. 27 e.	20
New Orleans, La	20	24	23	9	s. 74 e.	15	Wichita, Kans	30	19	18	8	n. 42 e.	15
Western Gulf States.							Oklahoma, Okla	26	24	13	8	n. 68 e.	5
Shreveport, La	19	27	21	11	s. 51 e.	14	*Southern Slope.*						
Fort Smith, Ark	23	9	29	10	n. 54 e.	24	Abilene, Tex	25	24	9	17	n. 83 w.	8
Little Rock, Ark	25	17	19	12	n. 41 e.	11	Amarillo, Tex	20	22	9	19	s. 79 w.	10
Corpus Christi, Tex	18	25	34	3	s. 77 e.	32	*Southern Plateau.*						
Galveston, Tex	10	37	24	7	s. 33 e.	32	Elpaso, Tex	20	10	13	35	n. 66 w.	24
Palestine, Tex	16	29	18	16	s. 9 e.	13	Santa Fe, N. Mex	24	18	13	25	n. 63 w.	13
San Antonio, Tex	22	18	31	3	n. 82 e.	28	Phœnix, Ariz	7	26	8	33	s. 53 w.	31
Ohio Valley and Tennessee.							Yuma, Ariz	24	8	14	29	n. 43 w.	22
Chattanooga, Tenn	22	20	14	18	n. 63 w.	4	*Middle Plateau.*						
Knoxville, Tenn	27	3	22	24	n. 5 w.	24	Carson City, Nev	12	25	13	22	s. 35 w.	16
Memphis, Tenn	26	16	25	14	n. 48 e.	15	Winnemucca, Nev	18	17	12	29	n. 87 w.	17
Nashville, Tenn	26	13	18	22	n. 17 w.	14	Salt Lake City, Utah	20	18	16	23	n. 74 w.	7
Lexington, Ky	16	19	17	24	s. 67 w.	8	*Northern Plateau.*						
Louisville, Ky	20	18	14	21	n. 74 w.	7	Baker City, Oreg	19	20	14	17	s. 17 w.	10
Indianapolis, Ind	26	12	19	23	n. 16 w.	15	Idaho Falls, Idaho	15	37	4	13	s. 22 w.	24
Cincinnati, Ohio	27	14	15	21	n. 25 w.	14	Spokane, Wash	12	26	17	22	s. 20 w.	15
Columbus, Ohio	18	14	18	23	n. 51 w.	6	Walla Walla, Wash	8	36	8	17	s. 18 w.	29
Pittsburg, Pa	20	16	12	30	n. 77 w.	18	*North Pacific Coast Region.*						
Parkersburg, W. Va	17	13	19	23	n. 45 w.	6	Fort Canby, Wash	20	9	19	17	n. 10 e.	11
Lower Lake Region.							Port Angeles, Wash	10	27	15	18	s. 10 w.	17
Buffalo, N. Y	20	10	14	31	n. 60 w.	20	Seattle, Wash	17	27	19	15	s. 22 e.	11
Oswego, N. Y	18	21	13	26	s. 77 w.	13	Tatoosh Island, Wash	9	12	30	21	s. 72 e.	10
Rochester, N. Y	13	17	11	37	s. 81 w.	26	Portland, Oreg	24	21	14	22	n. 69 w.	8
Erie, Pa	19	18	12	27	n. 86 w.	15	Roseburg, Oreg	16	18	16	27	s. 80 w.	11
Cleveland, Ohio	21	18	19	23	n. 53 w.	5	*Middle Pacific Coast Region.*						
Sandusky, Ohio	23	14	19	20	n. 6 w.	9	Eureka, Cal	24	20	18	19	n. 14 w.	4
Toledo, Ohio	17	11	18	28	n. 59 w.	12	Redbluff, Cal	20	23	14	20	s. 63 w.	7
Detroit, Mich	23	13	19	25	n. 31 w.	12	Sacramento, Cal	14	30	9	25	s. 45 w.	23
Upper Lake Region.							San Francisco, Cal	12	13	7	38	s. 88 w.	31
Alpena, Mich	24	15	12	29	n. 62 w.	19	*South Pacific Coast Region.*						
Grand Haven, Mich	22	16	23	16	n. 49 e.	9	Fresno, Cal	22	6	13	34	n. 53 w.	26
Marquette, Mich	28	15	8	30	n. 60 w.	26	Los Angeles, Cal	22	7	18	26	n. 28 w.	17
Port Huron, Mich	24	30	11	20	n. 66 w.	10	San Diego, Cal	23	6	14	31	n. 45 w.	24
Sault Ste. Marie, Mich	21	16	16	27	n. 66 w.	12	San Luis Obispo, Cal	28	12	6	25	n. 50 w.	25
Chicago, Ill	19	25	13	18	s. 51 w.	6							

* From observations at 8 p. m. only.

TABLE X.—*Thunderstorms and auroras, March*, 1896.

States.	No. of stations.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total. No.	Total. Days.	
Alabama	56	T.						7		1		4								5													1	18	5	T.
		A.																																0	0	A.
Arizona	49	T.																																0	0	T.
		A.																																0	0	A.
Arkansas	51	T.			1		7	4									3														2	5	7	29	7	T.
		A.																																0	0	A.
California	302	T.	1	1	1																	2						8	10					23	6	T.
		A.																																0	0	A.
Colorado	80	T.									1													1			1							3	3	T.
		A.																																0	0	A.
Connecticut	18	T.							3									1			1													5	3	T.
		A.													1	1																		2	2	A.
Delaware	6	T.							2																									2	1	T.
		A.			1	1																												2	2	A.
Dist. of Columbia	4	T.																																0	0	T.
		A.																																0	0	A.
Florida	38	T.										3	9					2		2	10					9								35	6	T.
		A.																																0	0	A.
Georgia	44	T.						2	2			1						1		4											1	4		15	7	T.
		A.																																0	0	A.
Idaho	38	T.												2												1	1	6	1					11	5	T.
		A.				2		1			1	5	1	1																				11	6	A.
Illinois	100	T.				1	3	3						1	1				1					1				2	10	42	8	4	8	85	13	T.
		A.				7	1					2			2																		1	14	6	A.
Indiana	41	T.				2	2	6																					1	16	11	2		38	6	T.
		A.																																0	0	A.
Indian Territory	9	T.														1	1															1	1	4	4	T.
		A.																																0	0	A.
Iowa	101	T.					1													1				1					27	14		1	26	71	7	T.
		A.				2	1	3		1		1	3	3	3							1						1						19	10	A.
Kansas	90	T.			2											1								3				3	15				24	5	T.
		A.								1																								1	1	A.
Kentucky	46	T.					2																					1	8	20	7	1	39	6	T.
		A.																																0	0	A.
Louisiana	46	T.				1	4	4	2			12	1		1		4		4	10					2							1	46	12	T.
		A.																																0	0	A.
Maine	17	T.																		1												1		2	2	T.
		A.																																7	2	A.
Maryland	42	T.							3						5	2				2								6			4	2		17	5	T.
		A.				9			1																									10	2	A.
Massachusetts	82	T.																1														2		3	2	T.
		A.						1							9	1						1											4	16	5	A.
Michigan	79	T.																									1			21	2		1	25	4	T.
		A.				20	2					3	1	6	4	2												2	2			1	43	10	A.
Minnesota	74	T.																									1		8	2	1	3	23	38	6	T.
		A.										2	15	4	11	3					1						1	3	1					45	10	A.
Mississippi	47	T.			2	1	2	4				6					2			7	1			2						1	1	5	35	13	T.
		A.																																0	0	A.
Missouri	103	T.					10																	4					9	11	3	2	23	62	7	T.
		A.																																0	0	A.
Montana	42	T.												2								1						1				1		8	5	T.
		A.			1	1		4	2				2								1							1	1					12	7	A.
Nebraska	130	T.																										1	28					29	2	T.
		A.						4	1	1	1		1			1	2														1			12	8	A.
Nevada	50	T.																								1	2	6	2	1				12	5	T.
		A.																																0	0	A.
New Hampshire	23	T.																													1			4	1	T.
		A.			1										6	5	1							1					1			4	19	7	A.
New Jersey	51	T.						16	1							1	1	3													2		24	6	T.
		A.			1	9	1	1								1																	13	5	A.
New Mexico	37	T.		1																														1	1	T.
		A.																																0	0	A.
New York	95	T.						3										2																23	4	T.
		A.			1	10									6	3														13	5		4	24	5	A.
North Carolina	60	T.	1									1						1		2	5			1						1	13	13	5	43	10	T.
		A.																																0	0	A.
North Dakota	40	T.																								2								2	1	T.
		A.	1		1			12	3	1		2	9	5	6	9	2	1									3	1	1			1	58	16	A.
Ohio	137	T.					1	25	4																			4	1	23	25	6		89	8	T.
		A.			1	26		1				1	1			2					1													35	9	A.
Oklahoma	23	T.		1	1																							3				1	5	3	T.
		A.																																0	0	A.
Oregon	60	T.																			1													1	1	T.
		A.																																0	0	A.
Pennsylvania	96	T.						1	2											1								2			2			8	5	T.
		A.				5									1	1											1							8	4	A.
Rhode Island	8	T.							1																									1	1	T.
		A.													3																			3	1	A.
South Carolina	40	T.										3	1	1				4		1	8	1									8			27	8	T.
		A.																																0	0	A.
South Dakota	44	T.			1			3	1				2		3	1										4		1	2					7	3	T.
		A.			1			11																			1							12	7	A.
Tennessee	51	T.	1		1		9																					1		6	15	13	12	69	9	T.
		A.																																0	0	A.
Texas	88	T.			1	2	3	4			1	11	1			2	5	3	2	9												1	1	46	14	T.
		A.																																0	0	A.
Utah	38	T.					1																					2		1				4	3	T.
		A.																																0	0	A.
Vermont	16	T.																													3			3	1	T.
		A.					1	1							2	2	1																	7	5	A.
Virginia	43	T.																												1	23	3		27	3	T.
		A.				1																												1	1	A.
Washington	54	T.																								1								1	1	T.
		A.				1	1	1	1			1																						5	5	A.
West Virginia	40	T.							1																			4			8	2	1	16	5	T.
		A.				1																												1	1	A.
Wisconsin	58	T.																								2		3	16			11	32	4	T.
		A.	1		1	7						8	1	7	5											1		2					33	9	A.
Wyoming	12	T.																																0	0	T.
		A.						1																										1	1	A.
Sums	2,799	T.	3	3	9	5	45	71	39	2	2	40	13	6	2	5	16	18	7	41	29	5	0	10	5	21	8	50	118	164	152	96	127	1,112	....	T.
		A.	2	0	9	102	7	37	9	4	2	6	52	15	72	41	8	1	0	0	2	3	0	1	0	1	6	9	6	0	1	3	15	414	....	A.

TABLE XI.—*Hourly sunshine as deduced from sunshine recorders, March, 1896.*

Stations.	Instrument.	Percentages for each hour of local mean time ending with the respective hour.																Monthly summary.			
		A. M.								P. M.								Instrumental record.			Personal estimate.
		5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	Actual.	Possible.	Per cent of possible.	
																		Hours.	*Hours.*		
Atlanta, Ga.	T.	.....	30	29	47	65	69	77	83	81	86	86	73	49	35	15	.....	240.8	372.3	65	42
Baltimore, Md.	T.	.....	8	22	31	43	55	57	60	67	68	62	59	51	42	35	.....	191.5	371.4	52	49
Bismarck, N. Dak.	P.	.....	19	39	47	59	65	68	68	57	56	50	40	41	24	17	.....	184.0	370.3	50	44
Boston, Mass.	T.	.....	54	52	51	56	64	60	63	65	63	61	52	46	40	48	.....	208.1	370.8	56	45
Buffalo, N. Y.	T.	.....	21	17	25	44	54	67	67	68	70	68	64	46	37	32	.....	195.2	370.9	53	36
Chicago, Ill.	T.	.....	69	41	46	62	71	79	83	84	86	70	66	53	34	26	.....	239.6	370.8	65	54
Cincinnati, Ohio	T.	.....	33	45	47	46	51	55	57	60	62	50	42	42	40	26	.....	183.7	371.4	49	41
Cleveland, Ohio	P.	.....	23	33	35	46	55	57	53	49	45	48	38	29	12	17	.....	154.1	370.8	42	32
Columbus, Ohio	T.	.....	33	31	33	49	55	60	74	72	57	56	51	33	30	13	.....	182.2	371.2	49	37
Denver, Colo.	P.	.....	58	43	67	76	81	85	81	75	73	65	61	51	29	33	.....	243.2	371.2	66	43
Des Moines, Iowa	T.	.....	69	54	41	41	46	49	51	48	53	56	58	56	55	63	.....	188.5	370.8	51	36
Detroit, Mich.	T.	.....	85	55	52	57	69	69	70	71	69	64	50	33	31	39	.....	213.2	370.8	57	50
Dodge City, Kans.	P.	.....	67	64	75	80	82	77	74	69	71	68	69	65	44	28	.....	258.1	371.4	69	57
Eastport, Me.	P.	.....	31	39	40	45	47	51	51	45	44	44	46	52	48	57	.....	171.3	370.7	46	32
Eureka, Cal.	P.	.....	42	16	31	45	53	52	58	62	57	53	51	35	27	28	.....	167.9	371.2	45	44
Galveston, Tex.	P.	.....	14	22	34	48	58	59	55	62	63	65	55	58	26	10	.....	187.2	372.6	50	46
Helena, Mont.	P.	.....	44	31	35	46	49	59	56	58	58	60	55	51	48	42	.....	187.5	370.3	51	50
Kansas City, Mo.	P.	.....	58	50	44	46	51	59	56	56	56	56	58	48	50	70	.....	196.1	371.4	53	47
Little Rock, Ark.	T.	.....	10	25	29	38	51	55	62	64	59	54	35	45	35	32	.....	177.3	372.1	48	33
Louisville, Ky.	T.	.....	25	27	36	43	62	62	60	65	70	65	62	51	48	48	.....	202.4	371.4	54	39
New Orleans, La.	T.	.....	0	25	28	36	48	57	59	60	65	68	58	54	36	17	.....	180.7	372.5	49	45
New York, N. Y.	T.	.....	33	35	39	49	56	56	59	58	62	63	64	63	54	37	.....	203.5	371.2	55	47
Northfield, Vt.	P.	.....	47	33	35	43	44	53	46	36	39	41	41	35	30	50	.....	148.7	370.7	40	32
Philadelphia, Pa.	T.	.....	58	61	54	54	61	63	71	71	72	73	71	64	56	30	.....	296.7	371.2	64	49
Phœnix, Ariz.	P.	.....	67	79	75	77	85	85	85	81	78	74	76	64	49	45	.....	280.6	372.3	75	53
Portland, Me.	T.	.....	40	29	48	51	52	58	64	62	69	69	62	55	43	38	.....	204.7	370.7	55	43
Portland, Oreg.	T.	.....	19	22	22	27	35	44	53	55	64	57	46	46	43	33	.....	158.6	370.3	43	44
Do	P.	.....	19	22	21	27	42	46	51	50	58	59	51	52	43	33	.....	161.2	370.3	44	44
Rochester, N. Y.	T.	.....	64	36	36	46	57	66	67	71	74	73	61	53	49	53	.....	214.7	370.9	58	49
St. Louis, Mo.	T.	.....	17	39	41	56	64	75	80	86	80	67	49	36	31	22	.....	217.2	371.4	58	48
Salt Lake City, Utah	P.	.....	8	33	34	49	55	53	51	49	52	50	58	57	39	17	.....	178.6	371.2	48	36
San Diego, Cal.	P.	.....	67	46	53	60	67	79	72	73	68	79	75	65	70	79	.....	252.3	372.3	68	52
San Francisco, Cal.	T.	.....	0	6	24	39	49	65	71	76	70	78	67	45	13	24	.....	188.1	371.4	51	46
Santa Fe, N. Mex.	P.	.....	27	53	67	75	71	72	69	76	70	69	68	65	55	38	.....	250.6	371.9	67	55
Savannah, Ga.	P.	.....	33	43	53	65	72	75	73	75	77	82	78	74	66	57	.....	258.4	372.1	69	58
Vicksburg, Miss.	T.	....	22	41	41	45	53	66	72	69	65	66	61	57	47	39	.....	211.4	372.1	57	51
Washington, D. C.	P.	.....	42	39	45	61	60	54	60	66	71	61	65	53	48	43	.....	212.2	371.4	57	57
Wilmington, N. C.	T.	.....	30	47	57	71	78	86	92	87	89	83	82	63	39	30	.....	269.8	372.3	72	61

TABLE XII.—*Maximum rainfall in one hour or less, March, 1896.*

Stations.	Maximum rainfall in—					
	5 min.	Date.	10 min.	Date.	1 hour.	Date.
	Inch.		*Inch.*		*Inch.*	
Atlanta, Ga.	0.07	6	0.09	6	0.25	6, 18
Baltimore.	0.10	19	0.14	19	0.26	19
Bismarck, N. Dak.*	.....	.....	.....	.....	.....	.....
Boston, Mass.	0.04	19, 29	0.07	19	0.21	29
Buffalo, N. Y.*	0.03	29	0.05	29	0.21	29
Chicago, Ill.	0.04	28	0.05	28	0.12	28
Cincinnati, Ohio	0.05	29	0.06	29	0.21	29
Cleveland, Ohio	0.05	6	0.07	6	0.29	6
Denver, Colo.	0.01	31	0.02	31	0.09	31
Detroit, Mich.	0.04	28	0.07	28	0.25	28
Dodge City, Kans.	.....	.....	.....	.....	0.08	3
Duluth, Minn.	0.01	31	0.02	31	0.15	31
Eastport, Me.	0.01	19	0.03	19	0.08	19
Galveston, Tex.	0.20	15	0.30	15	1.00	15
Indianapolis, Ind.	0.10	28	0.12	28	0.25	28
Jacksonville, Fla.	0.52	11	0.68	11	1.01	11
Jupiter, Fla.	0.24	10	0.39	10	0.60	10
Kansas City, Mo.	0.05	28	0.07	28	0.17	28
Key West, Fla.	0.15	19	0.26	16	0.51	16
Little Rock, Ark.	0.07	5	0.11	23	0.36	23
Louisville, Ky.	0.18	29	0.24	29	0.35	29
Marquet, Mich.*	.....	.....	.....	.....	.....	.....
Memphis, Tenn.	0.05	4	0.09	4	0.27	4

TABLE XII.—*Maximum rainfall*—Continued.

Stations.	Maximum rainfall in—					
	5 min.	Date.	10 min.	Date.	1 hour.	Date.
	Inch.		*Inch.*		*Inch.*	
Milwaukee, Wis.*	.....	.....	.....	.....	.....	.....
Nantucket, Mass.	0.06	29	0.10	29	0.23	16
Nashville, Tenn.	0.15	5	0.20	5	0.47	5
New Orleans, La.	0.40	18	0.62	18	1.55	18
New York, N. Y.*	.....	.....	.....	.....	.....	.....
Norfolk, Va.	0.04	16, 29	0.08	16	0.25	29
Omaha, Nebr.*	.....	.....	.....	.....	.....	.....
Philadelphia, Pa.	0.05	29	0.10	29	0.25	29
Pittsburg, Pa.*	.....	.....	.....	.....	.....	.....
Portland, Me.*	.....	.....	.....	.....	.....	.....
Portland, Oreg.	0.04	24	0.07	24	0.16	24
Rochester, N. Y.	0.04	7	0.06	7	0.23	7
St. Louis, Mo.	0.12	29	0.18	29	0.22	29
St. Paul, Minn.	0.10	27	0.15	27	0.37	27
Salt Lake City, Utah	.....	.....	0.01	28	0.05	27
San Diego, Cal.	0.10	28	0.15	28	0.66	28
San Francisco, Cal.	0.04	16	0.06	16	0.20	16
Savannah, Ga.	0.19	10	0.28	10	0.89	10
Seattle, Wash.	0.03	20	0.08	20	0.18	20
Vicksburg, Miss.	0.07	23	0.10	23	0.40	23
Washington, D. C.	0.24	19	0.40	19	0.43	19
Wilmington, N. C.	0.12	11	0.20	11	0.44	11

*Record incomplete on account of snow and other causes.

TABLE XIII.—*Excessive precipitation, by stations, for March, 1896.*

Stations.	Monthly rainfall 10 inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch, or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
Alabama.	*Inches.*	*Inches.*		*Ins.*	*h.m.*	
Brewton		4.50	10			
Daphne	10.05	7.80	10			
Evergreen		2.89	10–11			
Mobile		5.54	10–11			
Mount Willing		2.65	6			
Newton		2.99	10–11			
Arkansas.						
Arkansas City		2.50	6			
Conway		3.85	30–31			
Corning		2.74	30			
Forrest		3.20	3–4			
Pocahontas		3.16	30–31			
Russellville		2.90	14			
Witts Springs		2.64	31			
California.						
Azusa		4.25	2			
Bear Valley	14.47	2.65	26			
Bowmans Dam	14.95					
Delta	11.81					
Descanso		6.58	3–4			
Drytown		2.70	3			
Dunsmuir	10.23					
Georgetown	11.28	4.15	26–27			
Glendora		3.30	2			
Iowa Hill	10.93	4.97	25–27			
LaPorte	16.20	2.76	26			
Malakoff Mine	10.20					
Mount Lowe		2.70	3			
Mutah Flat		4.25	2–3			
Nordhoff		2.68	3			
Pilot Creek	13.07	5.62	25–26			
Placerville	11.11					
Sneddens Ranch		4.00	2			
Summerdale		2.92	26			
Tecarte Dam		2.63	3			
Towles	14.05					
Florida.						
Jacksonville				1.01	1 00	11
Milton	10.57	8.00	10			
Pensacola		5.08	10–11			
Tallahassee		3.24	10			
Georgia.						
Albany		3.00	10–11			
Blakely		3.75	10			
Fort Gaines		3.11	10–11			
Morgan		3.64	10			
Poulan		3.08	10–11			
Thomasville		3.33	10–11			
Illinois.						
Herrins Prairie				1.00	1 00	29
Kentucky.						
Alpha		2.85	31			
Franklin		3.62	30–31			
Greendale		3.22	11			
Marrowbone		2.83	30–31			
Pryorsburg		3.25	30			
Russellville		2.62	30–31			
Louisiana.						
Amite		4.80	10–11			
Hammond		3.85	10–11			
Melville		4.00	10	4.00	2 00	10
New Orleans				1.09	1 00	10
Do				1.55	1 00	18
Port Eads				2.27	2 00	18
Maine.						
Cornish		3.59	*			
Farmington	10.83	3.50	*			
Lewistown	10.10	4.36	*			
North Bridgeton	10.70	4.32	1			
Portland		3.50	*			

TABLE XIII.—*Excessive precipitation*—Continued.

Stations.	Monthly rainfall 10 inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch, or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
Maryland.	*Inches.*	*Inches.*		*Ins.*	*h.m.*	
Bachmans Valley		2.80	19			
Massachusetts.						
Leeds	11.45	4.02	19–20			
Mount Nonotuck		2.65	19			
Springfield Armory		2.59	19–20			
Worcester		3.60	1–2			
Minnesota.						
Dawson		2.50	31			
New London		3.98	31			
Mississippi.						
Brookhaven		2.50	6			
Enterprise		2.60	10			
Magnolia		3.18	10			
Mosspoint		5.85	10–11			
Water Valley		2.55	6			
Woodville		4.75	10–11			
Missouri.						
New Madrid		4.47	30–31			
Nebraska.						
Cook		2.78	27			
New Hampshire.						
Berlin Mills		2.55	1			
Dublin		2.60	19–20			
Hanover		4.10	19–20			
North Conway	11.86	6.70	†			
New Jersey.						
Charlotteburg		3.00	18–19			
Chester		2.60	19			
Dover		2.73	19			
Franklin Furnace		2.65	19			
New York.						
Middletown		2.60	*			
Mohonk Lake	11.07	4.70	*			
Westpoint	12.02	3.80	*			
Do		3.70	19–20			
Oregon.						
Lorella		5.25	26–27			
Salmon	13.93					
Pennsylvania.						
Blooming Grove		3.37	19			
East Mauch Chunk		3.40	29			
Honesdale		2.50	19			
South Carolina.						
Charleston		2.80	10–11			
South Dakota.						
Alexandria		2.50	30–31			
Gary		2.68	30–31			
Ipswich		5.75	4–5			
Tennessee.						
Clarksville		2.81	30–31			
McMinnville	10.48					
Savannah		3.16	5–6			
Trenton		2.75	30–31			
Union City		3.18	30–31			
Texas.						
Angleton		2.85	15			
Brazoria		2.76	15			
Fredericksburg				1.04	1 00	31
Galveston				1.00	1 00	15
Houston		2.83	16			
Stafford		4.20	15			
Victoria		3.10	15			
Virginia.						
Bigstone Gap	12.73					
Grahams Forge		2.94	29			

* February 29—March 1. † February 29—March 2.

Chart I. Tracks of Centers of Low Areas. March, 1896.

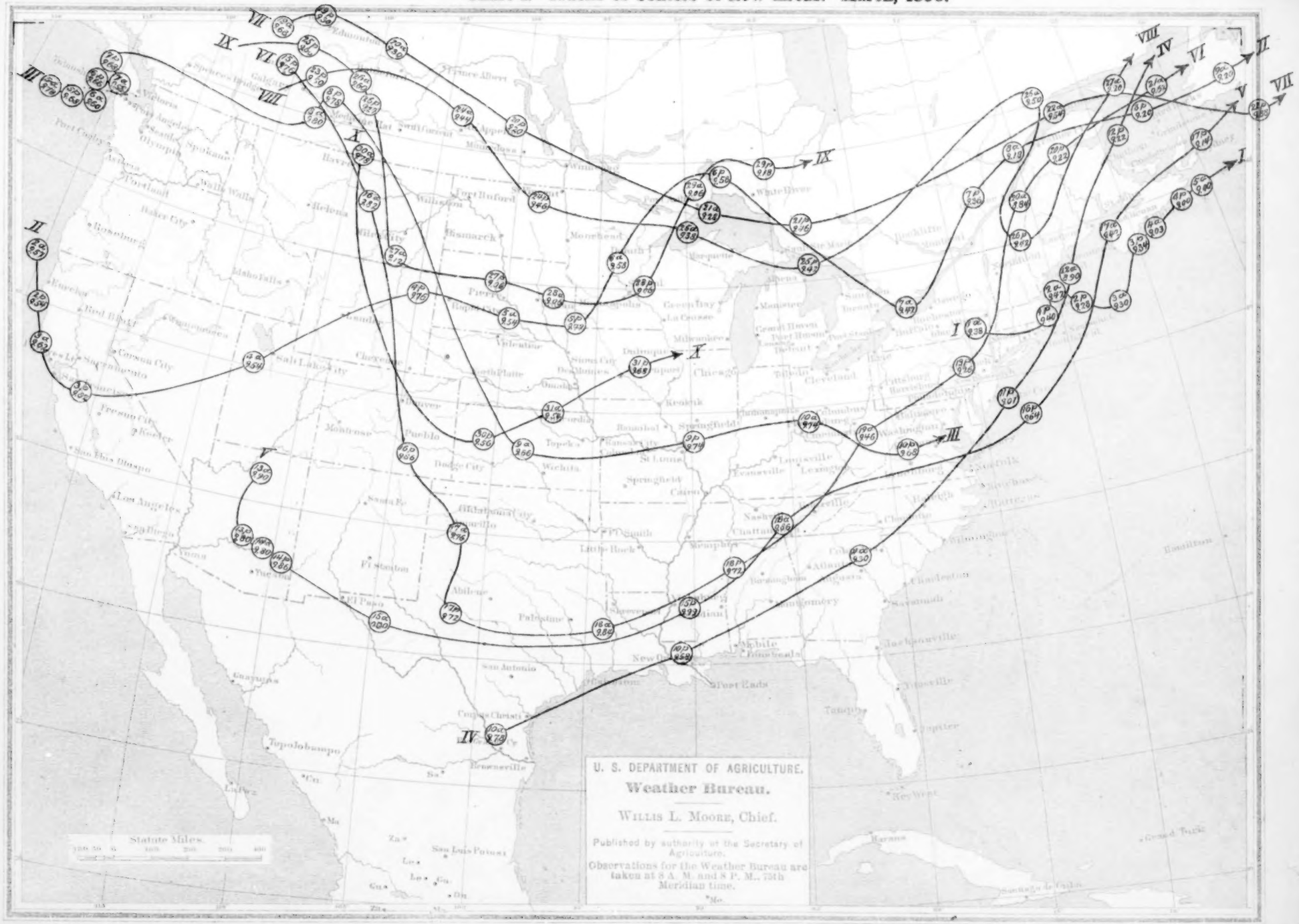


Chart II. Tracks of Centers of High Areas. March, 1896.

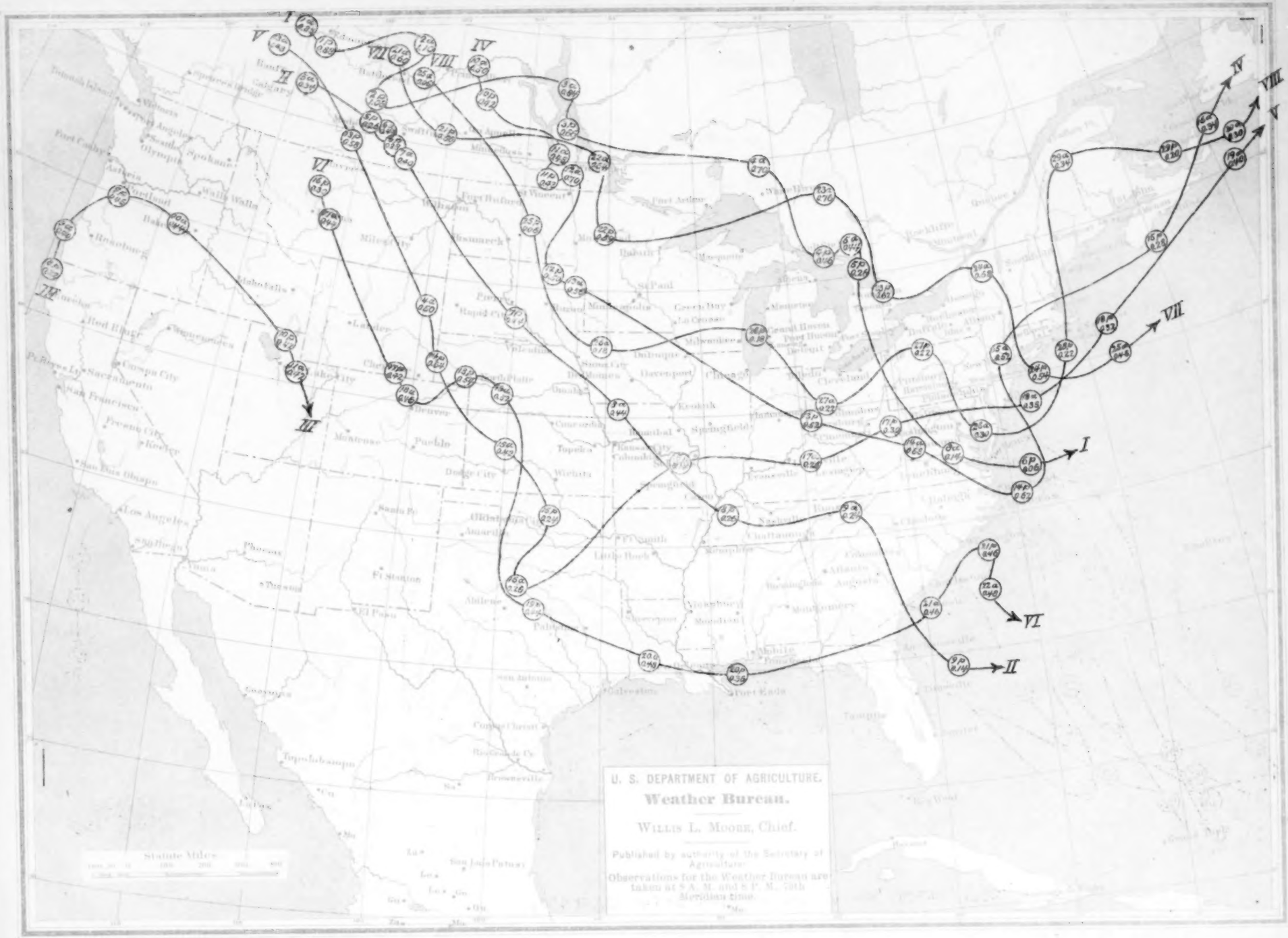


Chart III. Total Precipitation. March, 1896.

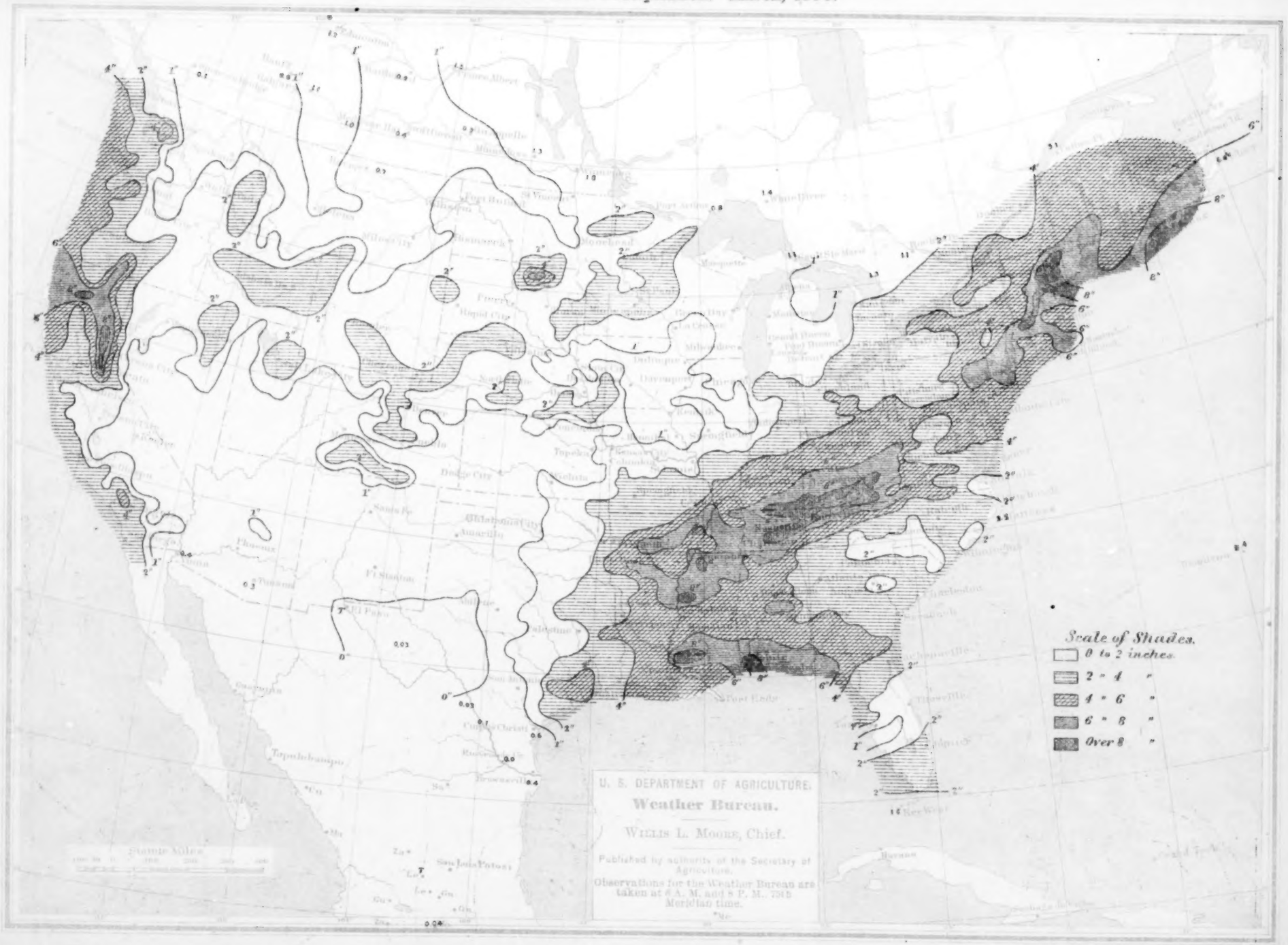


Chart IV. Isobars, Isotherms, and Resultant Winds. March, 1896.

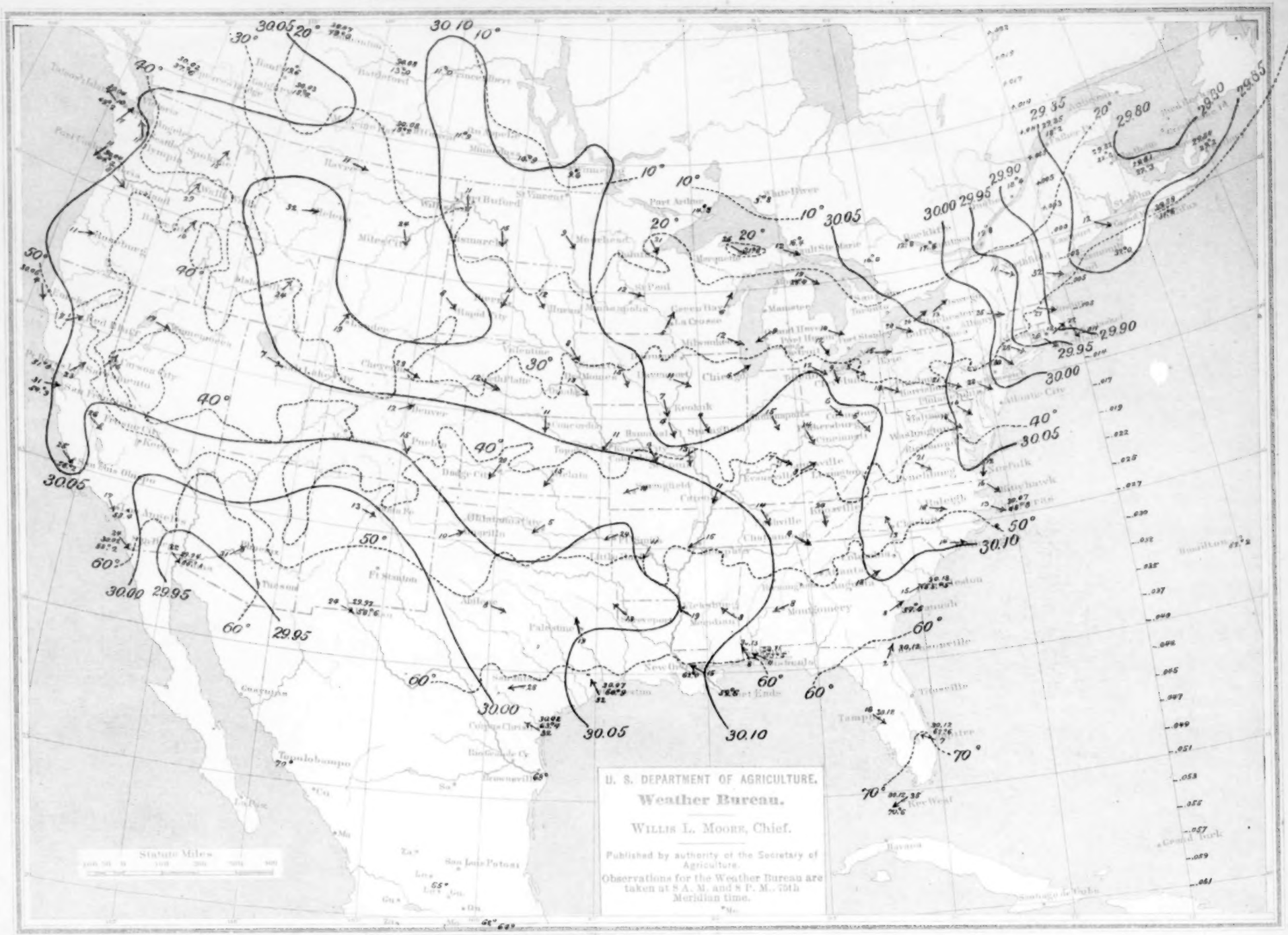
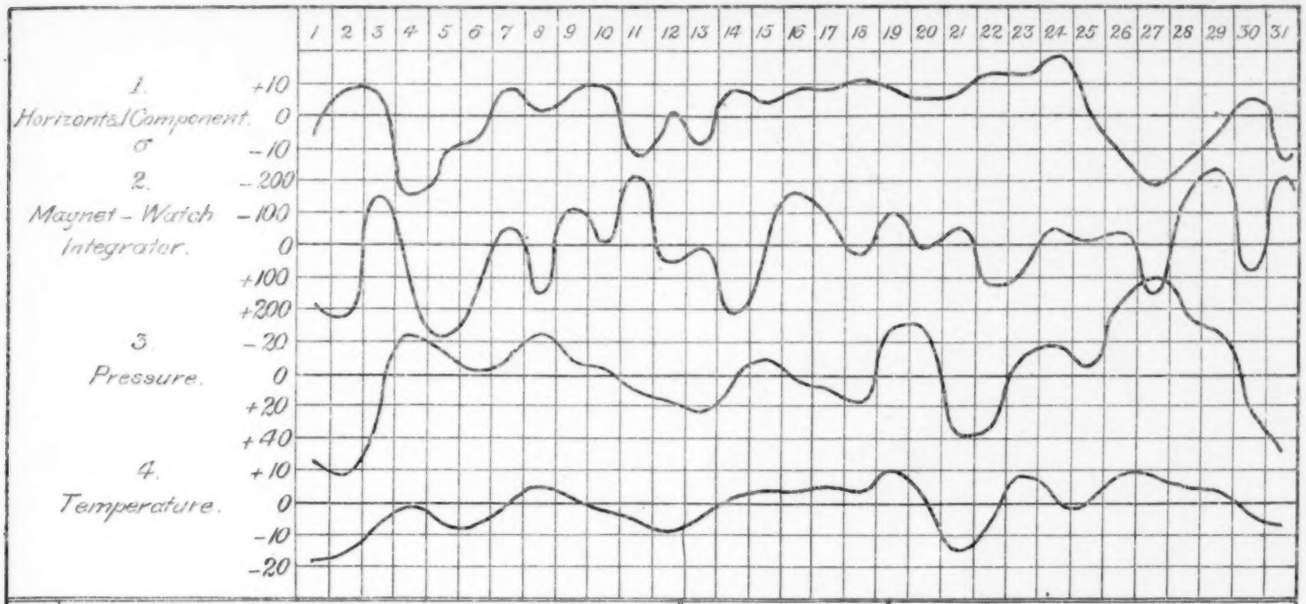


Chart V. Relative Variations of the Horizontal Magnetic Force, the Magnet-Watch Integrator, and the Northwest Pressures and Temperatures. March, 1896.



March 1896	Washington and Toronto. Deflecting Magnetic Forces.						Weather Bureau Magnet-Watch.		Northwest. Pressure.		Northwest. Temperature.	
	H	D	dx	dy.	c	β	Noon	Δt.	P	ΔP	T	ΔT
							h. m. s.	s.				
1	53	9.6	−5	−1	−5	191	11.43.15	+139	30.72	+57	−3	−17
2	67	10.2	+9	+2	+9	13	47.6	+231	30.79	+62	−2	−15
3	64	10.1	+6	+1	+6	10	44.28	−158	30.45	+26	5	−7
4	40	13.3	−18	+17	−25	136	46.9	+101	29.99	−23	10	−1
5	48	10.2	−11	+2	−11	170	51.6	+297	30.10	−15	4	−6
6	59	6.7	0	−6	−6	270	54.12	+192	30.24	−3	2	−7
7	50	9.9	−9	0	+9	180	53.16	−56	30.21	−9	8	0
8	61	9.9	+1	0	+1	0	56.2	+160	30.10	−24	12	+5
9	63	9.6	+3	−2	+8	347	54.7	−115	30.22	−10	10	+2
10	70	10.1	+10	+1	+10	6	54.1	−6	30.25	−4	6	−3
11	59	7.8	−2	−11	−11	260	50.38	−203	30.34	+7	0	−6
12	62	9.9	+1	0	+1	0	51.29	+51	30.42	+18	3	−9
13	57	8.6	−4	−7	−8	240	51.30	+1	30.45	+23	9	−4
14	69	9.4	+7	−3	+8	337	55.0	+210	30.23	+4	15	+1
15	65	10.5	+3	+3	+4	45	55.1	+1	30.09	−8	20	+4
16	71	10.3	+9	+2	+9	12	52.14	−167	30.15	+1	20	+3
17	69	10.9	+6	+6	+9	45	50.41	−93	30.19	+7	23	+5
18	74	9.8	+11	0	+11	0	51.15	+34	30.27	+18	22	+3
19	72	10.1	+9	+2	+9	12	49.35	−100	29.79	−28	30	+10
20	66	10.8	+2	+5	+5	69	49.40	+5	29.77	−27	23	+1
21	73	9.7	+9	−1	+9	353	48.47	−53	30.39	+38	8	−15
22	78	9.8	+14	0	+14	0	50.46	+119	30.34	+35	18	−7
23	76	9.8	+12	0	+12	0	52.16	+90	29.82	−14	35	+9
24	83	9.8	+18	0	+18	0	51.28	−48	29.75	−19	28	+1
25	67	9.7	+2	−1	+2	335	51.42	−14	29.91	−4	27	0
26	56	8.7	−9	−6	−11	213	50.54	−48	29.51	−44	36	+8
27	51	6.7	−15	−18	−22	226	53.32	+158	29.36	−60	36	+8
28	52	9.5	−14	−2	−14	188	51.16	−136	29.56	−40	34	+5
29	65	8.8	−1	−5	−5	258	47.12	−244	29.71	−26	33	+4
30	70	10.7	+3	+5	+6	59	48.33	+76	30.16	+19	27	−3
31	60	12.1	−7	+12	−14	120	45.9	−214	30.44	+46	24	−6

Chart VI. Depth of Snowfall and Limits of Freezing Weather. March, 1896.

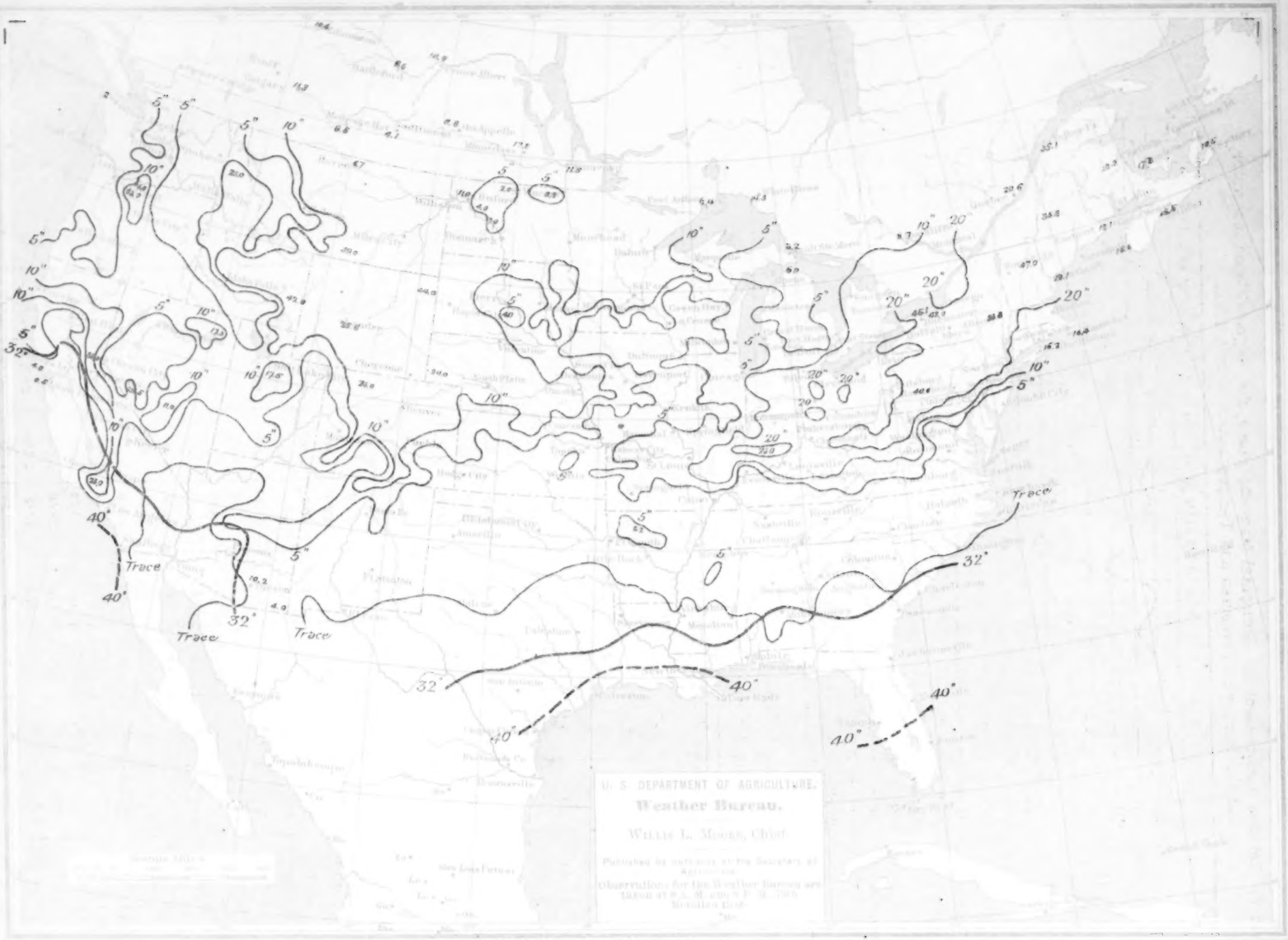


Chart VII. Depth of Snow Lying on Ground March 31, 1896.

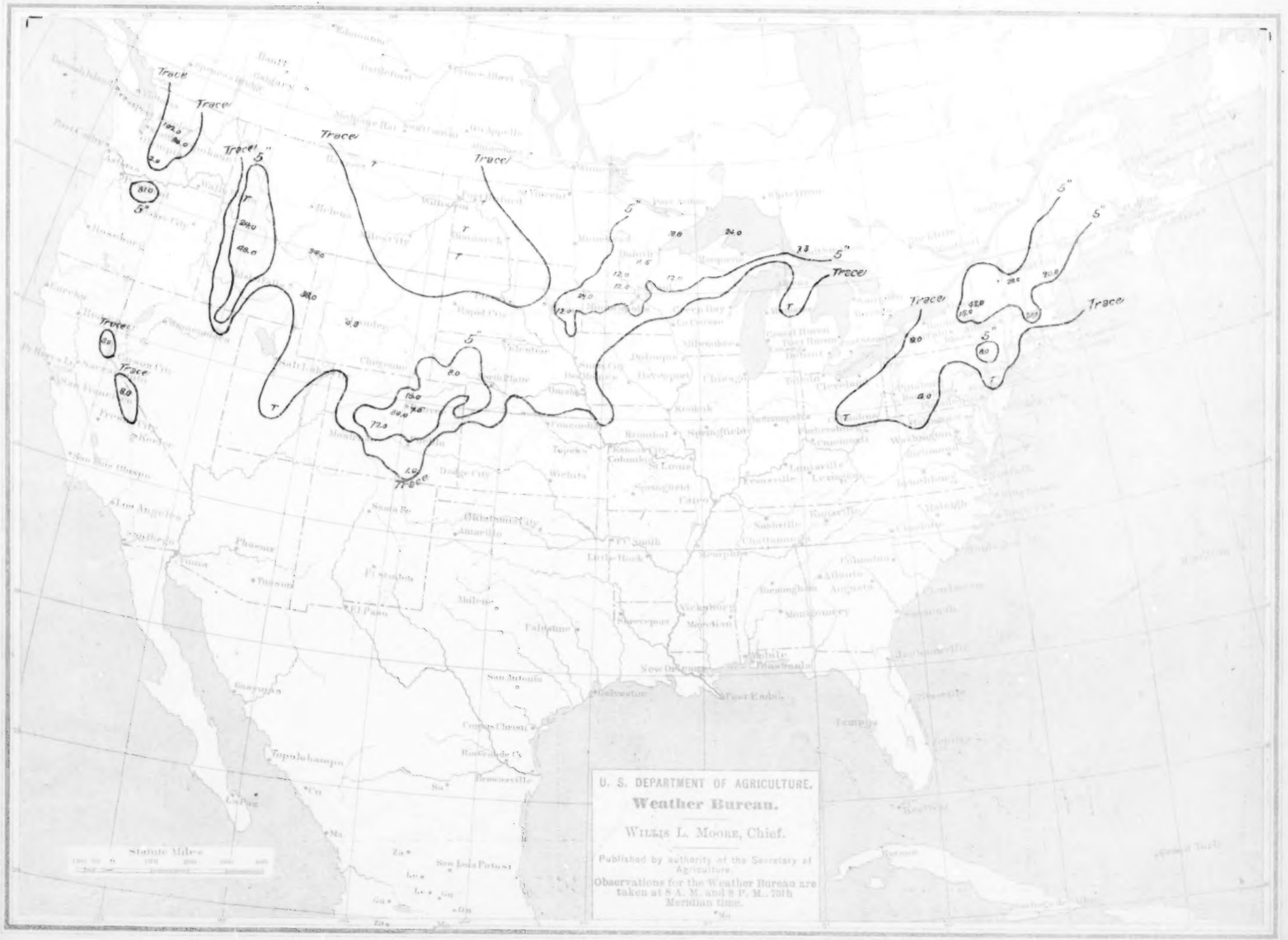
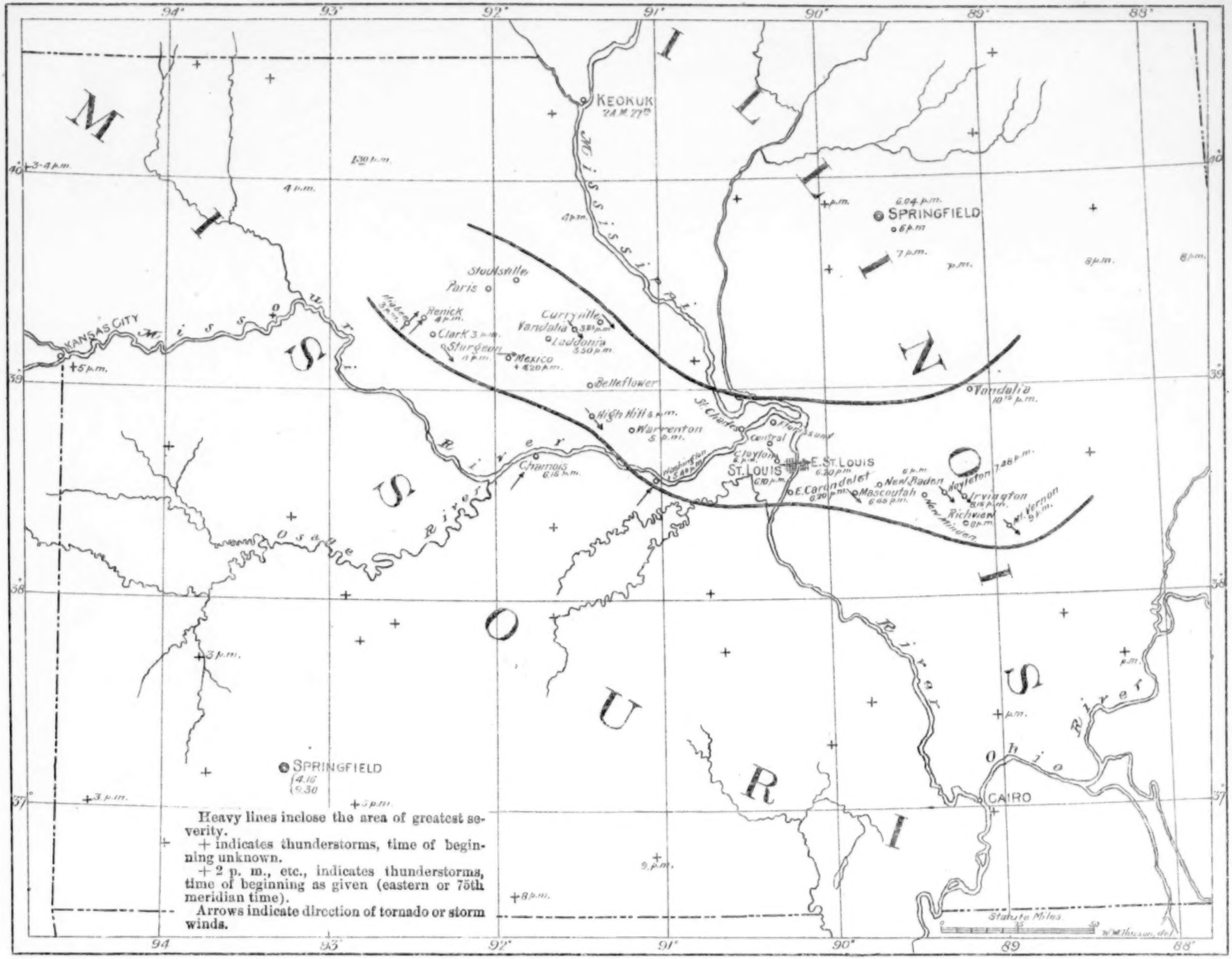


Chart VIII. Track of Tornadoes through Missouri and Illinois, May 27, 1896.



Heavy lines inclose the area of greatest severity.

+ indicates thunderstorms, time of beginning unknown.

+ 2 p. m., etc., indicates thunderstorms, time of beginning as given (eastern or 75th meridian time).

Arrows indicate direction of tornado or storm winds.

Chart IX. Records of Automatic Instruments.